CUSTOM INSTRUMENTATION SERVICES CORPORATION

SOLVAY SODA ASH JOINT VENTURE
GREEN RIVER, WYOMING

CONTINUOUS MONITORING SYSTEM
AND
FLUE GAS ANALYZER SYSTEM

CERTIFICATION TEST REPORT

PREPARED FOR:
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1. INTRODUCTION

Solvay Chemicals, Inc. owns and operates Solvay Soda Ash Joint Venture Plant, a sodium carbonate manufacturing facility located in Green River, Wyoming. The facility consists of two-stoker coal fired (originally a gas fired site) Calciners with one shared common stack. The Calciners will use Selective Non-Catalytic Reduction (SNCR), Flue Gas Recirculation (FGR) and water injection to control NO_x formation. Emissions from the stack will be monitored by a dedicated continuous monitoring system (CMS). The CMS for purpose of this protocol includes both the continuous emissions rate monitoring system (CERMS) and the continuous opacity monitoring system (COMS). Emissions from each Calciner will be monitored by a dedicated flue gas analyzer system (FGAS). The CMS and FGAS units are located at the base of the stack. Exhaust gases from all units are discharged into the atmosphere through a common stack approximately 110 feet above grade. This report contains information regarding the Calciner FGAS Unit 2 and the common stack CMS.

Custom Instrumentation Services Corporation of Centennial, Colorado built both the FGAS and CMS required per Federal and State regulations. This report provides information on the certification of the equipment measuring emissions from the Unit 2 Calciner and the common stack. Data from the FGAS and CMS is recorded and stored on a Data Acquisition System.

The FGAS and CMS on the Calciner and common stack, respectively have been designed to meet the monitoring and reporting requirements of the State of Wyoming Department of Environmental Quality (WDEQ) and USEPA as required by 40 CFR 60. This report presents the results of testing on the oxides of nitrogen (NO_x), oxygen (O_2), and stack flow analyzers on the unit 2 Calciner and the common stack. In addition, the common stack opacity monitor will be tested. The testing was performed to meet the requirements of 40 CFR 60, Appendix B, Performance Specifications 1, 2, 3, 6.

Field certification testing on the CMS and FGAS occurred between June 13, 2006 and September 15, 2006. These dates are consistent with the initial notification of the Solvay Soda Ash Joint Venture Certification Protocol. The tests conducted on the FGAS and CMS included Relative Accuracy, Linearity, and Calibration Drift test. COMS testing was performed on the common stack only.

Optimal Air Testing Services, Inc. of Casper Wyoming conducted the Relative Accuracy Test Audit (RATA) for NO_x, O_2 and flow. A minimum of nine 21-minute runs was completed on the Calciner and Common Stack. The results of the RATA tests are in the Optimal test portion, located in Appendix 1 of this report. As shown, the measured Relative Accuracy of each analyzer was within the EPA and WDEQ requirements for all parameters. A detailed description of the RA testing is provided in Section 2.1 and the Optimal test report in Appendix 1.

The calibration drift tests occurred during 7 consecutive operating days, which is consistent with WDEQ and federal accepted criteria. These tests took place between June

5, 2006 and June 21, 2006. The results of the analyzer drift tests are summarized in Tables 1 and 2. As shown, the analyzers operated well within the applicable EPA requirements. An explanation of the drift test is provided in Section 2.2 and supporting documentation is provided in Appendix 2.

Linearity tests on the NO_x and O_2 analyzers are a requirement of the WDEQ. 40 CFR 75 criteria were employed to meet this requirement. These tests took place between June 15, 2006 and June 16, 2006. 40 CFR 75 Appendix A 6.2 allows the exemption of the low NO_x range linearity. The results of the tests are summarized in Tables 1 and 2. As shown, the analyzers operated well within EPA requirements for all parameters. An explanation of the linearity test is provided in Section 2.3. Audit reports for the linearity tests are provided in Appendix 3.

Tests on the opacity monitor are a requirement of the WDEQ and 40 CFR 60. These tests took place between June 15, 2006 and September 15, 2006. The results of the tests are summarized in Table 1. As shown, the analyzers operated well within EPA requirements for all parameters. Explanations of the variety of opacity tests are provided in Section 2.4. Audit reports for the opacity tests are provided in Appendix 4.

Formula verifications were performed on the Data Acquisition and Handling System (DAHS) for the both the Calciner and the combined stack units on June 14-15, 2006. The DAHS passed all the tests required by EPA. The DAHS tests are described in Section 3 and supporting documents are provided in Appendix 5.

In summary, the CMS on the common stack and the FGAS on Unit 2 Calciner at the Solvay Soda Ash Joint Venture Site provides reliable data and operates within the requirements of the EPA as outlined in 40 CFR 60, Appendix B, Performance Specifications 1, 2, 3, 6 and the requirements of the WDEQ for CERMS, COMS and FGAS units.

Table 1
SOLVAY SODA ASH JOINT VENTURE COMMON STACK
SUMMARY OF CMS CERTIFICATION RESULTS

COMMON STACK	RESULTS	STANDARD	PASS / FAIL
RELATIVE ACCURACY			
NO_x ppm	6.46% RA	20% RA Reference Method	PASS
NO_x ppm @ 3% O_2	4.50% RA	20% RA Reference Method	PASS
NO_x lb/MMBtu	4.27% RA	20% RA Reference Method	PASS
NO_x lb/hr	6.39% RA	20% RA Reference Method	PASS
NO_x lb/hr	4.83% RA	10% RA Applicable Standard	PASS
O_2%, wet vol.	0.24% RA	1.00% RA	PASS
O_2%, dry vol.	0.04% RA	1.00% RA	PASS
7-DAY CALIBRATION DRIFT			
NO_x (Zero) 40 CFR 60	0.13% of span	2.5% of span	PASS
NO_x (Span) 40 CFR 60	1.66% of span	2.5% of span	PASS
O_2 % (Zero) 40 CFR 60	0.1%	0.5% O_2	PASS
O_2 % (Span) 40 CFR 60	0.3%	0.5% O_2	PASS
$O_{2\text{-wet}}$ % (Zero) 40 CFR 60	0.0%	0.5% O_2	PASS
$O_{2\text{-wet}}$ % (Span) 40 CFR 60	0.1%	0.5% O_2	PASS
Stack Flow (Zero) 40 CFR 60	0.19% of span	3.0% of span	PASS
Stack Flow (Span) 40 CFR 60	0.33% of span	3.0% of span	PASS
LINEARITY			
NO_X	2.7% LE	5% LE	PASS
O_2 %, wet vol.	1.8% LE	5% LE	PASS
O_2 %, dry vol.	1.4% LE	5% LE	PASS
OPACITY TESTS			
Optical Alignment Assessment	Observed Bull's-eye	Bull's-eye	PASS
Calibration Error Check	0.64% CE	3% CE (=md + cc)	PASS
Systems Response Time Check	7 seconds	10 seconds	PASS
Avg. Per Calc/Record Check	1.3% of ref. value	2% of reference value	PASS
Calibration Drift Test -zero	0.45% of ref. value	2% of reference value	PASS
Calibration Drift Test -span	0.06% of ref. value	2% of reference value	PASS

ANALYZER INFORMATION		
PARAMETER	**MODEL**	**SERIAL NUMBER**
NO_x	CAI NOXygen 650	S07048
$O_{2\text{-DRY}}$	CAI NOXygen 650	S07048
$O_{2\text{-WET}}$	Ametek CEM/O2	10208812
Stack Flow	OSI OFS-2000	05090203E
Opacity	Teledyne Instruments	5600912

WHERE: MD* = RA RESULTS BASED ON AVERAGE MEAN DIFFERENCE OF CMS AND REFERNCE METHOD DRIFT, LINEARITY AND OPACITY RESULTS ARE THE HIGHEST ENCOUNTERED DURING ALL TESTS

Table 2
SOLVAY SODA ASH JOINT VENTURE UNIT 2 CALCINER
SUMMARY OF FGAS CERTIFICATION RESULTS

UNIT 2 CALCINER	RESULTS	STANDARD	PASS / FAIL
RELATIVE ACCURACY			
NO_x ppm	7.75% RA	20% RA Reference Method	PASS
NO_x lb/MMBtu	1.32% RA	20% RA Reference Method	PASS
O_2%, dry vol.	0.57% RA	1.00% RA	PASS
7-DAY CALIBRATION DRIFT			
NO_x (Zero) 40 CFR 60	0.68% of span	2.5% of span	PASS
NO_x (Span) 40 CFR 60	1.43% of span	2.5% of span	PASS
O_2 % (Zero) 40 CFR 60	0.1%	0.5% O_2	PASS
O_2 % (Span) 40 CFR 60	0.2%	0.5% O_2	PASS
Stack Flow (Zero) 40 CFR 60	0.21% of span	3.0% of span	PASS
Stack Flow (Span) 40 CFR 60	0.31% of span	3.0% of span	PASS
LINEARITY			
NO_X	4.0% LE	5% LE	PASS
O_2 %, dry vol.	1.1% LE	5% LE	PASS
ANALYZER INFORMATION			
PARAMETER	**MODEL**		**SERIAL NUMBER**
NO_x	CAI NOXygen 650		S07049
$O_{2\text{-DRY}}$	CAI NOXygen 650		S07049
Stack Flow	OSI OFS-2000		05090204E

WHERE: MD* = RA RESULTS BASED ON AVERAGE MEAN DIFFERENCE OF FGAS AND REFERNCE METHOD
DRIFT AND LINEARITY RESULTS ARE THE HIGHEST ENCOUNTERED DURING ALL TESTS

2. CMS AND FGAS CERTIFICATION

Field tests and DAHS tests were performed for CMS and FGAS certification in accordance with the criteria in 40 CFR 60, Appendix B. The results for all tests were determined from the data collected by the DAHS. The computer printouts for each field test are included in the Appendices.

2.1 RELATIVE ACCURACY TEST AUDIT (RATA)

Relative accuracy test audits for the common stack and the Unit 2 Calciner were performed between June14-15, 2006. Each test run was a minimum of 21 minutes in duration and consisted of sampling for NO_x, O_2 and flow. The times during which the tests were performed are shown in the Optimal test report in Appendix 1.

The reference methods used by Interpoll are outlined below:

CONSTITUENT	METHOD
Nitrogen Oxides (ppmdv)	EPA 7E
Nitrogen Oxides (ppmdv @ 3% O_2)	EPA 3A & 7E
Nitrogen Oxides (lb/hr)	EPA 1-4 & 7E
Nitrogen Oxides (lb/hr)[1]	EPA 1-4 & 7E
Nitrogen Oxides (lb/10^6Btu)	EPA 3A, 7E & 19
Oxygen (%, wv)	EPA 3A & 4
Oxygen (%, dv)	EPA 3A
Stack Flow (kdscf/hr)	EPA 1-4

As shown in the Relative Accuracy tables in the Optimal test report, relative accuracies for NO_x, O_2 and flow are reported as a percent error and are the sum of the absolute mean value of the differences between the reference method tests and the instrument readings, plus the 95 percent confidence interval of the differences, expressed as a percentage of the mean reference method value. NO_x and flow results are acceptable if the relative accuracy using the reference method is less than or equal to 10 percent.

The analyzer response was determined from the average of readings taken every minute for the duration of the time the relative accuracy tests were performed. The raw value reports from the CMS and FGAS are included in the Optimal test report in Appendix 1.

The NO_x, O_2 and flow analyzers passed the relative accuracy requirements (as stated in 40 CFR 60, Appendix B, PS 2, 3 and 6.

[1] Calculated using the applicable standard of 73.0 lb/hr.

2.2 CALIBRATION DRIFT TEST

The 7-day calibration drift on the NO_x, O_2 and flow analyzers occurred between June 5, 2006 and June 21, 2006 on seven consecutive operating days when both the common stack and Unit 2 Calciner were combusting fuel at more than 50% of normal load.

The NO_x, O_2 and flow data from calibrations occurring over seven operating days are summarized in Appendix 2. As shown, the calibration error for all analyzers was well within EPA requirements. The calibration summary reports and certificates of analysis for the cylinders are provided in Appendices 2 and 6, respectively.

2.3 LINEARITY CHECK

The NO_x and O_2 linearity tests for the Unit 2 Calciner and the common stack were performed between June15, 2006 and June16, 2006. To perform the linearity test, the analyzers were challenged three times with each of three levels of calibration gas (low, mid and high). The mean difference between the analyzer response and the calibration gas value, as a percentage of the calibration gas value, must be within 5%. Results are also acceptable if the difference between the mean response and the calibration gas is within 5 ppm for NO_x or 0.5% O_2. The results for the analyzers on both units were within the requirements of WDEQ and 40 CFR 75 Appendix A.

Summaries of the linearity test results are provided in tables in Appendix 3. The calibration gases used for the linearity error tests were US EPA Protocol 1, following the requirements of 40 CFR 75, Appendix A. The certificates of analysis for the cylinders are included in Appendix 6.

2.4 COMS CERTIFICATION TEST

The common stack COMS certification test is comprised of four test groups: Certificate of Conformance, Measurement Location, Field Audit Performance Test and Operational Test Period. Custom Instrumentation Service Corporation (CiSCO) and Solvay Soda Ash personnel performed these tests between June 16, 2006 and September 15, 2006. The COMS data for these required tests are summarized in Appendix 4.

2.4.1 Certificate of Conformance

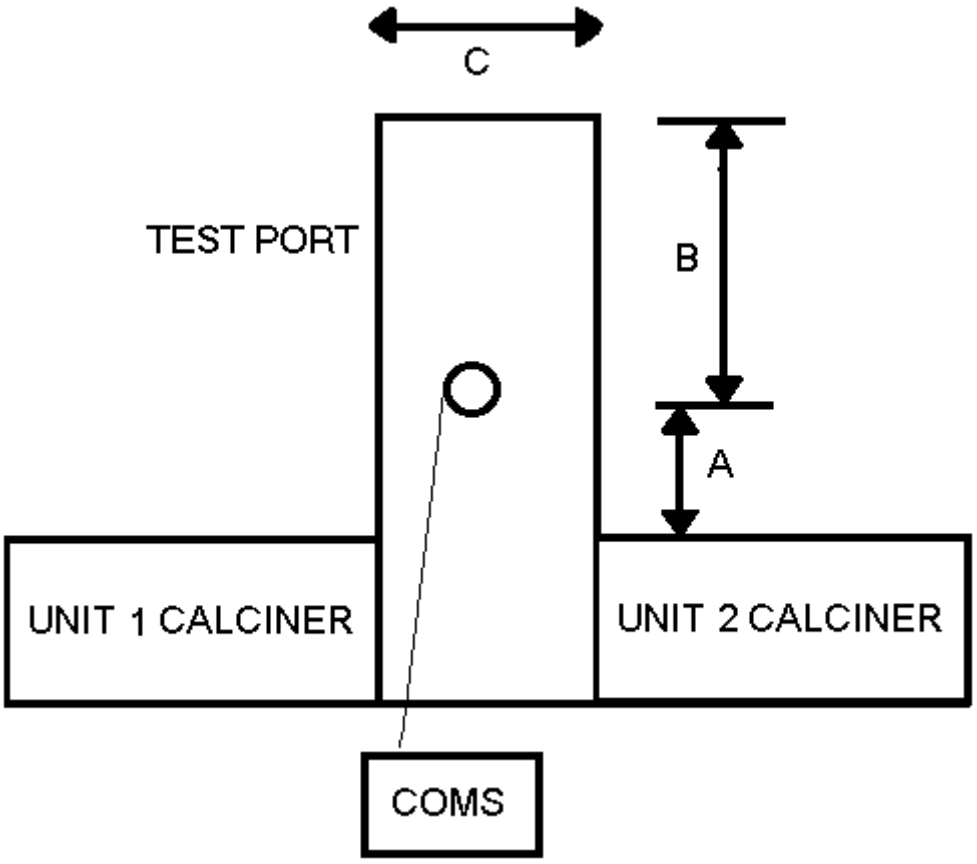
The Solvay Soda Ash facility is required to meet ASTM D 6216-98 and provide a certificate of conformance from the opacity monitor manufacturer to meet the requirements of 40 CFR 60 PS 1 Section 8.1 (1). The Teledyne Instruments LightHawk 560 COMS documentation can be found in Appendix 4.

2.4.2 Measurement of Location

40 CFR 60 Appendix B PS 1, Section 8.1(2) requires that the measuring location for the COMS be at least four duct diameters downstream from all particulate control equipment or flow disturbance. In addition, it must be at least two duct diameters upstream of a flow

disturbance. Figure 1 below is provided to demonstrate that the measurement location for the COMS at Solvay meets the 40 CRR 60 requirement.

Figure 1
Solvay Soda Ash Joint Venture
COMS Measurement Location



OPACITY MONITOR LOCATION INFORMATION
A - COMS TEST PORT ABOVE LAST DISTURBANCE - 61 FEET
1. 5.1 STACK DUCT DIAMETERS DOWNSTREAM OF DISTURBANCE
B - COMS TEST PORT PRIOR TO STACK EXIT - 85 FEET
1. 7.1 STACK DUCT DIAMETERS UPSTREAM OF DISTURBANCE
C - COMS TEST PORT STACK DIAMETER – 12 FEET

2.4.3 Field Audit Performance Tests

40 CFR 60 Appendix B PS 1, Section 8.2 field audit performance test is required after installation of a COMS. The following tests are required to meet the requirements of 40 CFR 60 Appendix B Section 8.1 (3).

2.4.3.1 Optical Alignment Assessment

Blair Jenkins of CiSCO and Solvay personnel performed this test on June 15, 2006. The across stack alignment of the Optical Head and the Retroreflector Assemblies was performed by observing the Retroreflector Assembly through the eyepiece and adjusting the Optical Head mounting nuts on the four mounting bolts which support the Optical Head Assembly on the blower plate. The eyepiece contains a cross hair and a series of concentric circles. The alignment was achieved by adjusting the head so that the cross hairs were centered on the bright green image of the Retroreflector and the eyepiece circles were concentric with the image. Supporting documentation is provided in Appendix 4.

2.4.3.2 Calibration Error Check (CEC)

A three-point calibration error test using three calibration attenuators (low, mid and high-level) was performed on June 16, 2006. Separately, each calibration attenuator was inserted into the analyzer. Five nonconsecutive readings were made on each of the attenuators. The calibration error is the sum of the absolute value of the mean difference and the 95% confidence coefficient for each of the three attenuators. The calibration error limit may not exceed 3 percent at any of the three levels.

As shown, the calibration error for the COMS is well within state and EPA requirements. The calibration summary reports/data and certificates of analysis for the attenuators are provided in Appendices 4 and 6, respectively.

2.4.3.3 System Response Time Check

The system response time check was completed September 8, 2006. A high level attenuator was alternately inserted and removed five times from the external audit device. For each filter insertion and removal the time was measured to determine the length of time to display 95% of the final steady reading for both upscale and downscale. The mean of the five upscale values and the five downscale values were calculated to determine the response times for both. The response time for either scale may not exceed 10 seconds.

As shown, the response time for the COMS is well within state and EPA requirements. The calibration summary reports/data and certificates of analysis for the attenuators are provided in Appendices 4 and 6, respectively.

2.4.3.4 Averaging Period Calculation and Recording Check

The averaging period calculation and recording check was performed on the common stack COMS on August 31, 2006 using two times the averaging period plus 1 minute or 13minute intervals. Consecutively, the calibration error check attenuators (low, mid, and high-level) were inserted into the external audit device for the 13-minute period. The COMS averaged values are compared to the corresponding attenuator values. The COMS

data recorder must average and record each calibration attenuator value to within ±2 percent opacity of the certified value of the attenuator.

As shown, the averaging period and recording for the COMS is well within state and EPA requirements. The calibration summary reports/data and certificates of analysis for the attenuators are provided in Appendices 4 and 6, respectively.

2.4.4 Operational Test Period

From September 9, 2006 to September 15, 2006, the COMS was operated for an initial 168-hour test period while Solvay Soda Ash facility was operating under normal operating conditions. During this period there was no unscheduled maintenance, repair, or adjustment to the COMS.

2.4.4.1 Calibration Drift Test

At the outset of the 168-hour operational test period and at each subsequent 24-hour interval, the automatic calibration check system initiated zero and span calibration checks to allow the zero and span drift to be determined. The COMS response to the simulated zero and span devices were recorded in the DAS. After each 24-hour period, the COMS zero and span reading was subtracted from the reference value to calculate the 24-hour zero drift (ZD) and span drift (CD). At the end of the 168-hour period, the arithmetic mean, standard deviation, and confidence coefficient of the 24-hour ZDs and CDs were calculated. The sum of the absolute value of the mean and the absolute value of the confidence coefficient were reported as the 24-hour ZD/CD error. The COMS zero and upscale calibration drift error must not exceed 2 percent opacity over a 24-hour period.

As shown, the calibration drift for the COMS is well within state and EPA requirements. The calibration drift summary reports/data and certificates of analysis for the attenuators are provided in Appendices 4 and 6, respectively.

3. FORMULA VERIFICATION

All variables included in the calculations were included. The formula verification spreadsheet and associated printouts are included in Appendix 5

4. DISCUSSION OF RESULTS

FGAS/DAS and CMS/DAS on Unit 2 Calciner and common stack, respectively at the Solvay Soda Ash Joint Venture Facility successfully met all the requirements of the EPA as outlined in 40 CFR 60.

APPENDIX 1

RELATIVE ACCURACY TEST AUDIT REPORT

APPENDIX 2

CMS AND FGAS
CALIBRATION DRIFT DOCUMENTATION

SOLVAY SODA ASH JOINT VENTURE
COMMON STACK INITIAL CERTIFICATION

ANALYZER:	***NOX***	***SERIAL NO:***	S07048
SPAN:	400		
MODEL:	CAI NOXygen 650		
TYPE:	Extractive/Chemiluminescent		

ZERO CALIBRATION ERROR							
DAY	*DATE*	*HOUR*	*SPAN*	*REF VALUE*	*CEMS VALUE*	*DIFF*	*ERROR %*
1	6/5/2006	5:00	400.00	0.000	0.333	0.333	0.08
2	6/6/2006	5:00	400.00	0.000	0.478	0.478	0.12
3	6/7/2006	5:00	400.00	0.000	0.501	0.501	0.13
4	6/8/2006	5:00	400.00	0.000	0.428	0.428	0.11
5	6/9/2006	5:00	400.00	0.000	0.382	0.382	0.10
6	6/10/2006	5:00	400.00	0.000	0.426	0.426	0.11
7	6/11/2006	5:00	400.00	0.000	0.521	0.521	0.13
						LIMIT	***2.5% OF SPAN***
						HIGH	**0.13**

SPAN CALIBRATION ERROR							
DAY	*DATE*	*HOUR*	*SPAN*	*REF VALUE*	*CEMS VALUE*	*DIFF*	*ERROR %*
1	6/5/2006	5:00	400.00	364.000	357.582	6.418	1.60
2	6/6/2006	5:00	400.00	364.000	364.900	0.900	0.22
3	6/7/2006	5:00	400.00	364.000	362.730	1.270	0.32
4	6/8/2006	5:00	400.00	364.000	357.586	6.414	1.60
5	6/9/2006	5:00	400.00	364.000	361.528	2.472	0.62
6	6/10/2006	5:00	400.00	364.000	359.988	4.012	1.00
7	6/11/2006	5:00	400.00	364.000	357.355	6.645	1.66
						LIMIT	***2.5% OF SPAN***
						HIGH	**1.66**

CALCULATIONS: ERROR = |R - A| / S

WHERE: R = REFERENCE VALUE (CALIBRATION GAS)
A = ACTUAL CEMS RESPONSE
S = ANALYZER SPAN

SOLVAY SODA ASH JOINT VENTURE

7-Day Drift Test

CA-1 & 2 NOx ppm

Time	Instrument Span	Zero Reference	Zero Measured	Zero Drift	Zero Drift Limit	Span Reference	Span Measured	Span Drift	Span Drift Limit	Status
06/05/06 05:00 AM	400	0.000	0.333	0.333	10.000	364.000	357.582	-6.418	10.000	On-Line
06/06/06 05:00 AM	400	0.000	0.478	0.478	10.000	364.000	364.900	0.900	10.000	On-Line
06/07/06 05:00 AM	400	0.000	0.501	0.501	10.000	364.000	362.730	-1.270	10.000	On-Line
06/08/06 05:00 AM	400	0.000	0.428	0.428	10.000	364.000	357.586	-6.414	10.000	On-Line
06/09/06 05:00 AM	400	0.000	0.382	0.382	10.000	364.000	361.528	-2.472	10.000	On-Line
06/10/06 05:00 AM	400	0.000	0.426	0.426	10.000	364.000	359.988	-4.012	10.000	On-Line
06/11/06 05:00 AM	400	0.000	0.521	0.521	10.000	364.000	357.355	-6.645	10.000	On-Line

The 7-Day Drift Test has been passed.

SOLVAY SODA ASH JOINT VENTURE
COMMON STACK INITIAL CERTIFICATION

ANALYZER: *O2* ***SERIAL NO:*** S07048
SPAN: 25
MODEL: CAI NOXygen 650
TYPE: Extractive/Paramagnetic

ZERO CALIBRATION ERROR							
DAY	*DATE*	*HOUR*	*SPAN*	*REF VALUE*	*CEMS VALUE*	*DIFF*	*RESULTS*
1	6/15/2006	6:09	25.00	0.000	0.054	0.054	0.1
2	6/16/2006	5:00	25.00	0.000	0.089	0.089	0.1
3	6/17/2006	5:00	25.00	0.000	0.105	0.105	0.1
4	6/18/2006	5:00	25.00	0.000	0.100	0.100	0.1
5	6/19/2006	5:00	25.00	0.000	0.089	0.089	0.1
6	6/20/2006	5:00	25.00	0.000	0.108	0.108	0.1
7	6/21/2006	5:00	25.00	0.000	0.113	0.113	0.1
						LIMIT	***0.5 % O2***
						HIGH	**0.1**

SPAN CALIBRATION ERROR							
DAY	*DATE*	*HOUR*	*SPAN*	*REF VALUE*	*CEMS VALUE*	*DIFF*	*RESULTS*
1	6/15/2006	6:09	25.00	18.000	18.142	0.142	0.1
2	6/16/2006	5:00	25.00	18.000	18.212	0.212	0.2
3	6/17/2006	5:00	25.00	18.000	18.286	0.286	0.3
4	6/18/2006	5:00	25.00	18.000	18.272	0.272	0.3
5	6/19/2006	5:00	25.00	18.000	18.188	0.188	0.2
6	6/20/2006	5:00	25.00	18.000	18.244	0.244	0.2
7	6/21/2006	5:00	25.00	18.000	18.305	0.305	0.3
						LIMIT	***0.5 % O2***
						HIGH	**0.3**

CALCULATIONS: ERROR = |R - A|

WHERE: R = REFERENCE VALUE (CALIBRATION GAS)
A = ACTUAL CEMS RESPONSE

SOLVAY SODA ASH JOINT VENTURE

7-Day Drift Test

CA-1 & 2 O2%

Time	Instrument Span	Zero Reference	Zero Measured	Zero Drift	Zero Drift Limit	Span Reference	Span Measured	Span Drift	Span Drift Limit	Status
06/15/06 06:09 AM	25	2.460	2.514	0.054	0.500	18.000	18.142	0.142	0.500	On-Line
06/16/06 05:00 AM	25	2.460	2.549	0.089	0.500	18.000	18.212	0.212	0.500	On-Line
06/17/06 05:00 AM	25	2.460	2.565	0.105	0.500	18.000	18.286	0.286	0.500	On-Line
06/18/06 05:00 AM	25	2.460	2.560	0.100	0.500	18.000	18.272	0.272	0.500	On-Line
06/19/06 05:00 AM	25	2.460	2.549	0.089	0.500	18.000	18.188	0.188	0.500	On-Line
06/20/06 05:00 AM	25	2.460	2.568	0.108	0.500	18.000	18.244	0.244	0.500	On-Line
06/21/06 05:00 AM	25	2.460	2.573	0.113	0.500	18.000	18.305	0.305	0.500	On-Line

The 7-Day Drift Test has been passed.

SOLVAY SODA ASH JOINT VENTURE
COMMON STACK INITIAL CERTIFICATION

ANALYZER: ***O2*** ***SERIAL NO:*** 10208812
SPAN: 25
MODEL: Ametek CEM/O2
TYPE: Extractive/Paramagnetic

ZERO CALIBRATION ERROR							
DAY	*DATE*	*HOUR*	*SPAN*	*REF VALUE*	*CEMS VALUE*	*DIFF*	*RESULTS*
1	6/15/2006	6:09	25.00	0.000	0.000	0.000	0.0
2	6/16/2006	5:00	25.00	0.000	0.010	0.010	0.0
3	6/17/2006	5:00	25.00	0.000	0.020	0.020	0.0
4	6/18/2006	5:00	25.00	0.000	0.010	0.010	0.0
5	6/19/2006	5:00	25.00	0.000	0.030	0.030	0.0
6	6/20/2006	5:00	25.00	0.000	0.000	0.000	0.0
7	6/21/2006	5:00	25.00	0.000	0.000	0.000	0.0
						LIMIT	***0.5 % O2***
						HIGH	**0.0**

SPAN CALIBRATION ERROR							
DAY	*DATE*	*HOUR*	*SPAN*	*REF VALUE*	*CEMS VALUE*	*DIFF*	*RESULTS*
1	6/15/2006	6:09	25.00	18.000	18.017	0.017	0.0
2	6/16/2006	5:00	25.00	18.000	18.018	0.018	0.0
3	6/17/2006	5:00	25.00	18.000	18.021	0.021	0.0
4	6/18/2006	5:00	25.00	18.000	18.038	0.038	0.0
5	6/19/2006	5:00	25.00	18.000	18.053	0.053	0.1
6	6/20/2006	5:00	25.00	18.000	18.049	0.049	0.0
7	6/21/2006	5:00	25.00	18.000	18.027	0.027	0.0
						LIMIT	***0.5 % O2***
						HIGH	**0.1**

CALCULATIONS: ERROR = |R - A|

WHERE: R = REFERENCE VALUE (CALIBRATION GAS)
A = ACTUAL CEMS RESPONSE

SOLVAY SODA ASH JOINT VENTURE

7-Day Drift Test

CA-1 & 2 O2% Wet

Time	Instrument Span	Zero Reference	Zero Measured	Zero Drift	Zero Drift Limit	Span Reference	Span Measured	Span Drift	Span Drift Limit	Status
06/15/06 06:09 AM	25	2.460	2.514	0.054	0.750	18.000	18.017	0.017	0.750	On-Line
06/16/06 05:00 AM	25	2.460	2.524	0.064	0.750	18.000	18.018	0.018	0.750	On-Line
06/17/06 05:00 AM	25	2.460	2.568	0.108	0.750	18.000	18.021	0.021	0.750	On-Line
06/18/06 05:00 AM	25	2.460	2.596	0.136	0.750	18.000	18.038	0.038	0.750	On-Line
06/19/06 05:00 AM	25	2.460	2.588	0.128	0.750	18.000	18.053	0.053	0.750	On-Line
06/20/06 05:00 AM	25	2.460	2.598	0.138	0.750	18.000	18.049	0.049	0.750	On-Line
06/21/06 05:00 AM	25	2.460	2.591	0.131	0.750	18.000	18.027	0.027	0.750	On-Line

The 7-Day Drift Test has been passed.

SOLVAY2016_1.3_001599

SOLVAY SODA ASH JOINT VENTURE
COMMON STACK INITIAL CERTIFICATION

ANALYZER:	***Stack Flow***	***SERIAL NO:***	05090203E
SPAN:	7827		
MODEL:	OSI OFS-2000		
TYPE:	IR Beam		

ZERO CALIBRATION ERROR							
DAY	*DATE*	*HOUR*	*SPAN*	*REF VALUE*	*CEMS VALUE*	*DIFF*	*ERROR %*
1	6/15/2006	4:09	7827.000	787.200	772.265	14.935	0.19
2	6/16/2006	4:09	7827.000	787.200	774.170	13.030	0.17
3	6/17/2006	4:09	7827.000	787.200	774.952	12.248	0.16
4	6/18/2006	4:09	7827.000	787.200	773.692	13.508	0.17
5	6/19/2006	4:09	7827.000	787.200	773.733	13.467	0.17
6	6/20/2006	4:09	7827.000	787.200	775.077	12.123	0.15
7	6/21/2006	4:09	7827.000	787.200	773.874	13.326	0.17
						LIMIT	***3.0% OF SPAN***
						HIGH	**0.19**

SPAN CALIBRATION ERROR							
DAY	*DATE*	*HOUR*	*SPAN*	*REF VALUE*	*CEMS VALUE*	*DIFF*	*ERROR %*
1	6/15/2006	4:09	7827.000	4723.200	4697.536	25.664	0.33
2	6/16/2006	4:09	7827.000	4723.200	4697.676	25.524	0.33
3	6/17/2006	4:09	7827.000	4723.200	4697.523	25.677	0.33
4	6/18/2006	4:09	7827.000	4723.200	4697.895	25.305	0.32
5	6/19/2006	4:09	7827.000	4723.200	4698.388	24.812	0.32
6	6/20/2006	4:09	7827.000	4723.200	4698.042	25.158	0.32
7	6/21/2006	4:09	7827.000	4723.200	4697.955	25.245	0.32
						LIMIT	***3.0% OF SPAN***
						HIGH	**0.33**

CALCULATIONS: ERROR = |R - A| / S

WHERE: R = REFERENCE VALUE (CALIBRATION GAS)
A = ACTUAL CEMS RESPONSE
S = ANALYZER SPAN

SOLVAY SODA ASH JOINT VENTURE

7-Day Drift Test

CA-1 & 2 Stack Velocity- ft/min

Time	Instrument Span	Zero Reference	Zero Measured	Zero Drift	Zero Drift Limit	Span Reference	Span Measured	Span Drift	Span Drift Limit	Status
06/15/06 04:09 AM	7872	787.200	772.265	-14.935	236.160	4723.200	4697.536	-25.664	236.160	On-Line
06/16/06 04:09 AM	7872	787.200	774.170	-13.030	236.160	4723.200	4697.676	-25.524	236.160	On-Line
06/17/06 04:09 AM	7872	787.200	774.952	-12.248	236.160	4723.200	4697.523	-25.677	236.160	On-Line
06/18/06 04:09 AM	7872	787.200	773.692	-13.508	236.160	4723.200	4697.895	-25.305	236.160	On-Line
06/19/06 04:09 AM	7872	787.200	773.733	-13.467	236.160	4723.200	4698.388	-24.812	236.160	On-Line
06/20/06 04:09 AM	7872	787.200	775.077	-12.123	236.160	4723.200	4698.042	-25.158	236.160	On-Line
06/21/06 04:09 AM	7872	787.200	773.874	-13.326	236.160	4723.200	4697.955	-25.245	236.160	On-Line

The 7-Day Drift Test has been passed.

SOLVAY2016_1.3_001601

SOLVAY SODA ASH JOINT VENTURE
UNIT 2 CALCINER INITIAL CERTIFICATION

ANALYZER:	*NOX*	***SERIAL NO:***	S07049
SPAN:	400		
MODEL:	CAI NOXygen 650		
TYPE:	Extractive/Chemiluminescent		

ZERO CALIBRATION ERROR							
DAY	*DATE*	*HOUR*	*SPAN*	*REF VALUE*	*CEMS VALUE*	*DIFF*	*ERROR %*
1	6/13/2006	6:00	400.00	0.000	2.324	2.324	0.58
2	6/14/2006	6:00	400.00	0.000	2.029	2.029	0.51
3	6/15/2006	6:00	400.00	0.000	2.342	2.342	0.59
4	6/16/2006	6:00	400.00	0.000	2.701	2.701	0.68
5	6/17/2006	6:00	400.00	0.000	2.567	2.567	0.64
6	6/18/2006	6:00	400.00	0.000	2.269	2.269	0.57
7	6/19/2006	6:00	400.00	0.000	2.435	2.435	0.61
						LIMIT	***2.5% OF SPAN***
						HIGH	**0.68**

SPAN CALIBRATION ERROR							
DAY	*DATE*	*HOUR*	*SPAN*	*REF VALUE*	*CEMS VALUE*	*DIFF*	*ERROR %*
1	6/13/2006	6:00	400.00	364.000	368.012	4.012	1.00
2	6/14/2006	6:00	400.00	364.000	358.273	5.727	1.43
3	6/15/2006	6:00	400.00	364.000	366.590	2.590	0.65
4	6/16/2006	6:00	400.00	364.000	365.773	1.773	0.44
5	6/17/2006	6:00	400.00	364.000	365.278	1.278	0.32
6	6/18/2006	6:00	400.00	364.000	365.654	1.654	0.41
7	6/19/2006	6:00	400.00	364.000	364.397	0.397	0.10
						LIMIT	***2.5% OF SPAN***
						HIGH	**1.43**

CALCULATIONS: ERROR = |R - A| / S

WHERE: R = REFERENCE VALUE (CALIBRATION GAS)
A = ACTUAL CEMS RESPONSE
S = ANALYZER SPAN

SOLVAY SODA ASH JOINT VENTURE

7-Day Drift Test

CA-2 NOx ppm

Time	Instrument Span	Zero Reference	Zero Measured	Zero Drift	Zero Drift Limit	Span Reference	Span Measured	Span Drift	Span Drift Limit	Status
06/13/06 06:00 AM	400	0.000	2.324	2.324	10.000	364.000	368.012	4.012	10.000	On-Line
06/14/06 06:00 AM	400	0.000	2.029	2.029	10.000	364.000	358.273	-5.727	10.000	On-Line
06/15/06 06:00 AM	400	0.000	2.342	2.342	10.000	364.000	366.590	2.590	10.000	On-Line
06/16/06 06:00 AM	400	0.000	2.701	2.701	10.000	364.000	365.773	1.773	10.000	On-Line
06/17/06 06:00 AM	400	0.000	2.567	2.567	10.000	364.000	365.278	1.278	10.000	On-Line
06/18/06 06:00 AM	400	0.000	2.269	2.269	10.000	364.000	365.654	1.654	10.000	On-Line
06/19/06 06:00 AM	400	0.000	2.435	2.435	10.000	364.000	364.397	0.397	10.000	On-Line

The 7-Day Drift Test has been passed.

SOLVAY2016_1.3_001603

SOLVAY SODA ASH JOINT VENTURE
UNIT 2 CALCINER INITIAL CERTIFICATION

ANALYZER: ***O2*** ***SERIAL NO:*** S07049
SPAN: 25
MODEL: CAI NOXygen 650
TYPE: Extractive/Paramagnetic

ZERO CALIBRATION ERROR							
DAY	*DATE*	*HOUR*	*SPAN*	*REF VALUE*	*CEMS VALUE*	*DIFF*	*RESULTS*
1	6/13/2006	6:00	25.00	2.510	2.448	0.062	0.1
2	6/14/2006	6:00	25.00	2.460	2.474	0.014	0.0
3	6/15/2006	6:00	25.00	2.460	2.519	0.059	0.1
4	6/16/2006	6:00	25.00	2.460	2.528	0.068	0.1
5	6/17/2006	6:00	25.00	2.460	2.545	0.085	0.1
6	6/18/2006	6:00	25.00	2.460	2.524	0.064	0.1
7	6/19/2006	6:00	25.00	2.460	2.520	0.060	0.1
						LIMIT	***0.5 % O2***
						HIGH	**0.1**

SPAN CALIBRATION ERROR							
DAY	*DATE*	*HOUR*	*SPAN*	*REF VALUE*	*CEMS VALUE*	*DIFF*	*RESULTS*
1	6/13/2006	6:00	25.00	20.900	21.090	0.190	0.2
2	6/14/2006	6:00	25.00	20.900	20.918	0.018	0.0
3	6/15/2006	6:00	25.00	20.900	20.988	0.088	0.1
4	6/16/2006	6:00	25.00	20.900	21.055	0.155	0.2
5	6/17/2006	6:00	25.00	20.900	21.132	0.232	0.2
6	6/18/2006	6:00	25.00	20.900	21.113	0.213	0.2
7	6/19/2006	6:00	25.00	20.900	21.002	0.102	0.1
						LIMIT	***0.5 % O2***
						HIGH	**0.2**

CALCULATIONS: ERROR = |R - A|

WHERE: R = REFERENCE VALUE (CALIBRATION GAS)
A = ACTUAL CEMS RESPONSE

SOLVAY SODA ASH JOINT VENTURE

7-Day Drift Test

CA-2 O2%

Time	Instrument Span	Zero Reference	Zero Measured	Zero Drift	Zero Drift Limit	Span Reference	Span Measured	Span Drift	Span Drift Limit	Status
06/13/06 06:00 AM	25	2.460	2.448	-0.012	0.500	20.900	21.090	0.190	0.500	On-Line
06/14/06 06:00 AM	25	2.460	2.474	0.014	0.500	20.900	20.918	0.018	0.500	On-Line
06/15/06 06:00 AM	25	2.460	2.519	0.059	0.500	20.900	20.988	0.088	0.500	On-Line
06/16/06 06:00 AM	25	2.460	2.528	0.068	0.500	20.900	21.055	0.155	0.500	On-Line
06/17/06 06:00 AM	25	2.460	2.545	0.085	0.500	20.900	21.132	0.232	0.500	On-Line
06/18/06 06:00 AM	25	2.460	2.524	0.064	0.500	20.900	21.113	0.213	0.500	On-Line
06/19/06 06:00 AM	25	2.460	2.520	0.060	0.500	20.900	21.002	0.102	0.500	On-Line

The 7-Day Drift Test has been passed.

SOLVAY2016_1.3_001605

SOLVAY SODA ASH JOINT VENTURE
UNIT 2 CALCINER INITIAL CERTIFICATION

ANALYZER:	***Stack Flow***	***SERIAL NO:***	05090202E
SPAN:	7827		
MODEL:	OSI OFS-2000		
TYPE:	IR Beam		

ZERO CALIBRATION ERROR							
DAY	*DATE*	*HOUR*	*SPAN*	*REF VALUE*	*CEMS VALUE*	*DIFF*	*ERROR %*
1	6/13/2006	4:34	7827.000	787.200	774.896	12.304	0.16
2	6/14/2006	4:34	7827.000	787.200	773.373	13.827	0.18
3	6/15/2006	4:34	7827.000	787.200	770.469	16.731	0.21
4	6/16/2006	4:34	7827.000	787.200	775.473	11.727	0.15
5	6/17/2006	4:34	7827.000	787.200	770.469	16.731	0.21
6	6/18/2006	4:34	7827.000	787.200	775.884	11.316	0.14
7	6/19/2006	4:34	7827.000	787.200	777.044	10.156	0.13
						LIMIT	***3.0% OF SPAN***
						HIGH	**0.21%**

SPAN CALIBRATION ERROR							
DAY	*DATE*	*HOUR*	*SPAN*	*REF VALUE*	*CEMS VALUE*	*DIFF*	*ERROR %*
1	6/13/2006	4:34	7827.000	4723.200	4698.969	24.231	0.31
2	6/14/2006	4:34	7827.000	4723.200	4699.604	23.596	0.30
3	6/15/2006	4:34	7827.000	4723.200	4698.699	24.501	0.31
4	6/16/2006	4:34	7827.000	4723.200	4698.712	24.488	0.31
5	6/17/2006	4:34	7827.000	4723.200	4698.614	24.586	0.31
6	6/18/2006	4:34	7827.000	4723.200	4699.049	24.151	0.31
7	6/19/2006	4:34	7827.000	4723.200	4699.598	23.602	0.30
						LIMIT	***3.0% OF SPAN***
						HIGH	**0.31%**

CALCULATIONS: ERROR = |R - A| / S

WHERE: R = REFERENCE VALUE (CALIBRATION GAS)
A = ACTUAL CEMS RESPONSE
S = ANALYZER SPAN

SOLVAY SODA ASH JOINT VENTURE

7-Day Drift Test

CA-2 Stack Velocity ft/min

Time	Instrument Span	Zero Reference	Zero Measured	Zero Drift	Zero Drift Limit	Span Reference	Span Measured	Span Drift	Span Drift Limit	Status
06/13/06 04:34 AM	7872	787.200	774.896	-12.304	236.160	4723.200	4698.969	-24.231	236.160	On-Line
06/14/06 04:34 AM	7872	787.200	773.373	-13.827	236.160	4723.200	4699.604	-23.596	236.160	On-Line
06/15/06 04:34 AM	7872	787.200	770.469	-16.731	236.160	4723.200	4698.699	-24.501	236.160	On-Line
06/16/06 04:34 AM	7872	787.200	775.473	-11.727	236.160	4723.200	4698.712	-24.488	236.160	On-Line
06/17/06 04:34 AM	7872	787.200	770.469	-16.731	236.160	4723.200	4698.614	-24.586	236.160	On-Line
06/18/06 04:34 AM	7872	787.200	775.884	-11.316	236.160	4723.200	4699.049	-24.151	236.160	On-Line
06/19/06 04:34 AM	7872	787.200	777.044	-10.156	236.160	4723.200	4699.598	-23.602	236.160	On-Line

The 7-Day Drift Test has been passed.

APPENDIX 3

LINEARITY CHECK DOCUMENTATION

SOLVAY SODA ASH JOINT VENTURE
COMMON STACK NOX LINEARITY

Test Information

Test Date:	**6/16/2006**
Facility:	Solvay Soda Ash
Unit:	CA1_CA2 Common
Test Reason:	Initial Certification
Aborted:	No

Analyzer Information

Range:	High
Instrument Span:	400
Manufacturer:	California Analytical Instruments
Model:	650
Serial Number:	S07048

Low Gas Cylinder Number: CC-68355

Run No.	TIME	Reference Gas	CEMS Response	d_i
1	1:54 PM	103.60	106.81	-3.21
2	2:06 PM	103.60	106.73	-3.13
3	2:21 PM	103.60	105.57	-1.97

n	3
avg /d/	2.77
avg /RM/	103.60
avg /CEM/	106.37
Linearity Error	2.7
LIMIT	5.0%

Mid Gas Cylinder Number: AAL16337

Run No.	TIME	Reference Gas	CEMS Response	d_i
1	1:59 PM	221.00	217.80	3.20
2	2:11 PM	221.00	217.06	3.94
3	2:25 PM	221.00	215.81	5.19

n	3
avg /d/	4.11
avg /RM/	221.00
avg /CEM/	216.89
Linearity Error	1.9
LIMIT	5.0%

High Gas Cylinder Number: SA11830

Run No.	TIME	Reference Gas	CEMS Response	d_i
1	2:02 PM	364.00	364.58	-0.58
2	2:16 PM	364.00	363.94	0.06
3	2:29 PM	364.00	361.24	2.76

n	3
avg /d/	0.75
avg /RM/	364.00
avg /CEM/	363.25
Linearity Error	0.2
LIMIT	5.0%

Linearity Error (LE) Determination: $LE = (|R-A| / R) * 100$

R = Reference gas value

A = Mean of actual CEMS responses

CeDAR 1-Minute Data

SOLVAY SODA ASH JOINT VENTURE

Data for 6/15/2006 12:50 PM thru 6/15/2006 1:26 PM

Timestamp	(CA-2) NOx ppm 1-Min
6/15 12:50	139.96 <15>
6/15 12:51	115.46 <15>
6/15 12:52	109.43 <15>
6/15 12:53	108.59 <15>
6/15 12:54	107.80 <15>
6/15 12:55	113.20 <15>
6/15 12:56	214.58 <15>
6/15 12:57	218.37 <15>
6/15 12:58	218.84 <15>
6/15 12:59	254.76 <15>
6/15 13:00	363.93 <15>
6/15 13:01	365.50 <15>
6/15 13:02	366.27 <15>
6/15 13:03	366.72 <15>
6/15 13:04	140.00 <15>
6/15 13:05	109.11 <15>
6/15 13:06	108.17 <15>
6/15 13:07	107.67 <15>
6/15 13:08	194.48 <15>
6/15 13:09	218.76 <15>
6/15 13:10	218.89 <15>
6/15 13:11	218.85 <15>
6/15 13:12	327.05 <15>
6/15 13:13	365.55 <15>
6/15 13:14	365.99 <15>
6/15 13:15	226.53 <15>
6/15 13:16	109.49 <15>
6/15 13:17	108.41 <15>
6/15 13:18	107.67 <15>
6/15 13:19	176.04 <15>
6/15 13:20	218.65 <15>
6/15 13:21	218.88 <15>
6/15 13:22	264.87 <15>
6/15 13:23	364.60 <15>
6/15 13:24	365.95 <15>
6/15 13:25	366.45 <15>
6/15 13:26	161.22 <15>
Average (all)	219.64
Total (all)	--
Minimum (all)	107.67
Maximum (all)	366.72
Average (valid values only)	--
Total (valid values only)	--
Count (valid values only)	0

<15> = Preventative Maintenance

CeDAR 1-Minute Data

SOLVAY SODA ASH JOINT VENTURE

Data for 6/15/2006 1:52 PM thru 6/15/2006 2:38 PM

Timestamp	(CA-1 & 2) NOx ppm 1-Min
6/15 13:52	85.61 <15>
6/15 13:53	106.28 <15>
6/15 13:54	106.81 <15>
6/15 13:55	106.47 <15>
6/15 13:56	198.02 <15>
6/15 13:57	216.78 <15>
6/15 13:58	217.48 <15>
6/15 13:59	217.80 <15>
6/15 14:00	347.23 <15>
6/15 14:01	362.88 <15>
6/15 14:02	364.58 <15>
6/15 14:03	353.23 <15>
6/15 14:04	117.84 <15>
6/15 14:05	108.49 <15>
6/15 14:06	106.73 <15>
6/15 14:07	106.33 <15>
6/15 14:08	192.52 <15>
6/15 14:09	215.99 <15>
6/15 14:10	216.66 <15>
6/15 14:11	217.06 <15>
6/15 14:12	307.70 <15>
6/15 14:13	361.76 <15>
6/15 14:14	363.05 <15>
6/15 14:15	363.23 <15>
6/15 14:16	363.94 <15>
6/15 14:17	363.58 <15>
6/15 14:18	163.29 <15>
6/15 14:19	108.80 <15>
6/15 14:20	106.37 <15>
6/15 14:21	105.57 <15>
6/15 14:22	184.58 <15>
6/15 14:23	214.86 <15>
6/15 14:24	215.71 <15>

Timestamp	(CA-1 & 2) NOx ppm 1-Min
6/15 14:25	215.81 <15>
6/15 14:26	215.74 <15>
6/15 14:27	285.38 <15>
6/15 14:28	358.74 <15>
6/15 14:29	361.24 <15>
6/15 14:30	360.93 <15>
6/15 14:31	361.32 <15>
6/15 14:32	360.86 <15>
6/15 14:33	84.99 <15>
6/15 14:34	28.20 <15>
6/15 14:35	0.22 <15>
6/15 14:36	0.00 <15>
6/15 14:37	0.00 <15>
6/15 14:38	0.00 <15>
Average (all)	208.95
Total (all)	–
Minimum (all)	0.00
Maximum (all)	364.58
Average (valid values only)	–
Total (valid values only)	–
Count (valid values only)	0

<15> = Preventative Maintenance

SOLVAY2016_1.3_001612

SOLVAY SODA ASH JOINT VENTURE
COMMON STACK O2 - DRY LINEARITY

Test Information

Test Date:	**6/16/2006**
Facility:	Solvay Soda Ash
Unit:	CA1_CA2 Common
Test Reason:	Initial Certification
Aborted:	No

Analyzer Information

Range:	High
Instrument Span:	25
Manufacturer:	California Analytical Instruments
Model:	650
Serial Number:	S07048

Low Gas Cylinder Number: ALM034985

Run No.	TIME	Reference Gas	CEMS Response	d_i
1	1:02 PM	5.11	5.12	-0.01
2	1:12 PM	5.11	5.15	-0.04
3	1:23 PM	5.11	5.13	-0.02

n	3
avg /d/	0.02
avg /RM/	5.11
avg /CEM/	5.13
Linearity Error	**0.5**
LIMIT	5.0%

Mid Gas Cylinder Number: CC178815

Run No.	TIME	Reference Gas	CEMS Response	d_i
1	1:05 PM	11.94	12.15	-0.21
2	1:15 PM	11.94	12.15	-0.21
3	1:25 PM	11.94	12.16	-0.22

n	3
avg /d/	0.21
avg /RM/	11.94
avg /CEM/	12.15
Linearity Error	**1.8**
LIMIT	5.0%

High Gas Cylinder Number: INSTR. AIR

Run No.	TIME	Reference Gas	CEMS Response	d_i
1	1:08 PM	20.90	21.15	-0.25
2	1:18 PM	20.90	21.19	-0.29
3	1:29 PM	20.90	21.20	-0.30

n	3
avg /d/	0.28
avg /RM/	20.90
avg /CEM/	21.18
Linearity Error	**1.3**
LIMIT	5.0%

Linearity Error (LE) Determination: $LE = (|R-A| / R) * 100$

R = Reference gas value

A = Mean of actual CEMS responses

SOLVAY SODA ASH JOINT VENTURE
COMMON STACK O2 - WET LINEARITY

Test Information	
Test Date:	**6/16/2006**
Facility:	Solvay Soda Ash
Unit:	CA1_CA2 Common
Test Reason:	Initial Certification
Aborted:	No

Analyzer Information	
Range:	High
Instrument Span:	25
Manufacturer:	Ametek
Model:	CEM/O2
Serial Number:	10208812

Low Gas Cylinder Number: ALM034985

Run No.	TIME	Reference Gas	CEMS Response	d_i
1	1:00 PM	5.11	5.02	0.09
2	1:10 PM	5.11	5.04	0.07
3	1:19 PM	5.11	5.05	0.06

n	3
avg /d/	0.07
avg /RM/	5.11
avg /CEM/	5.04
Linearity Error	**1.4**
LIMIT	5.0%

Mid Gas Cylinder Number: CC178815

Run No.	TIME	Reference Gas	CEMS Response	d_i
1	1:02 PM	11.94	11.98	-0.04
2	1:13 PM	11.94	12.01	-0.07
3	1:23 PM	11.94	12.00	-0.06

n	3
avg /d/	0.06
avg /RM/	11.94
avg /CEM/	12.00
Linearity Error	**0.5**
LIMIT	5.0%

High Gas Cylinder Number: INSTR. AIR

Run No.	TIME	Reference Gas	CEMS Response	d_i
1	1:07 PM	20.90	20.97	-0.07
2	1:17 PM	20.90	20.98	-0.08
3	1:27 PM	20.90	21.00	-0.10

n	3
avg /d/	0.08
avg /RM/	20.90
avg /CEM/	20.98
Linearity Error	**0.4**
LIMIT	5.0%

Linearity Error (LE) Determination: $LE = (|R-A| / R) * 100$

R = Reference gas value

A = Mean of actual CEMS responses

Audit Data

SOLVAY SODA ASH JOINT VENTURE

Data for 6/16/2006 12:58:20 PM thru 6/16/2006 1:33:00 PM from '2006-06-16 12.58.cea'

Timestamp	(CA-1 & 2) O2%	(CA-1 & 2) O2% Wet
12:58:20 PM	12.85	9.33
12:58:30 PM	12.83	9.34
12:58:40 PM	13.01	9.33
12:58:50 PM	13.03	9.36
12:59:00 PM	12.97	5.23
12:59:10 PM	11.85	4.93
12:59:20 PM	5.98	4.95
12:59:30 PM	5.58	4.97
12:59:40 PM	5.44	4.99
12:59:50 PM	5.34	4.99
1:00:00 PM	5.29	5.00
1:00:10 PM	5.25	5.02
1:00:20 PM	5.23	5.00
1:00:30 PM	5.20	5.01
1:00:40 PM	5.19	5.01
1:00:50 PM	5.16	5.02
1:01:00 PM	5.16	5.03
1:01:10 PM	5.15	5.03
1:01:20 PM	5.14	5.02
1:01:30 PM	5.15	5.03
1:01:40 PM	5.14	5.03
1:01:50 PM	5.14	5.03
1:02:00 PM	5.12	5.03
1:02:10 PM	5.14	5.04
1:02:20 PM	5.13	8.32
1:02:30 PM	5.14	11.98
1:02:40 PM	10.46	11.98
1:02:50 PM	11.73	11.98
1:03:00 PM	11.87	11.98
1:03:10 PM	11.94	11.97
1:03:20 PM	11.99	11.99
1:03:30 PM	12.03	12.00
1:03:40 PM	12.06	11.98
1:03:50 PM	12.08	11.97
1:04:00 PM	12.10	11.98
1:04:10 PM	12.11	11.98
1:04:20 PM	12.13	11.98
1:04:30 PM	12.12	11.99
1:04:40 PM	12.14	11.98
1:04:50 PM	12.14	11.98
1:05:00 PM	12.15	11.98
1:05:10 PM	12.15	11.98
1:05:20 PM	12.16	11.99
1:05:30 PM	12.15	11.98
1:05:40 PM	12.15	11.99
1:05:50 PM	12.16	11.98
1:06:00 PM	12.17	11.97

Timestamp	(CA-1 & 2) O2%	(CA-1 & 2) O2% Wet
1:06:10 PM	12.16	11.98
1:06:20 PM	12.15	10.38
1:06:30 PM	12.16	18.25
1:06:40 PM	12.76	20.94
1:06:50 PM	19.42	20.95
1:07:00 PM	20.53	20.96
1:07:10 PM	20.77	20.97
1:07:20 PM	20.07	20.96
1:07:30 PM	21.71	20.96
1:07:40 PM	21.02	20.96
1:07:50 PM	21.08	20.97
1:08:00 PM	21.09	20.96
1:08:10 PM	21.11	20.95
1:08:20 PM	21.13	20.96
1:08:30 PM	21.15	20.96
1:08:40 PM	21.17	20.96
1:08:50 PM	21.15	20.97
1:09:00 PM	21.17	20.96
1:09:10 PM	21.19	20.97
1:09:20 PM	21.20	20.98
1:09:30 PM	21.19	20.96
1:09:40 PM	21.19	20.96
1:09:50 PM	21.20	5.07
1:10:00 PM	15.61	5.05
1:10:10 PM	6.57	5.05
1:10:20 PM	5.98	5.05
1:10:30 PM	5.74	5.05
1:10:40 PM	5.58	5.04
1:10:50 PM	5.46	5.04
1:11:00 PM	5.41	5.04
1:11:10 PM	5.35	5.05
1:11:20 PM	5.29	5.04
1:11:30 PM	5.26	5.06
1:11:40 PM	5.23	5.03
1:11:50 PM	5.23	5.03
1:12:00 PM	5.20	5.04
1:12:10 PM	5.20	5.04
1:12:20 PM	5.16	5.04
1:12:30 PM	5.16	5.04
1:12:40 PM	5.16	5.05
1:12:50 PM	5.15	5.04
1:13:00 PM	5.15	5.04
1:13:10 PM	5.15	11.46
1:13:20 PM	5.15	12.00
1:13:30 PM	10.92	12.00
1:13:40 PM	11.78	12.00
1:13:50 PM	11.88	12.01
1:14:00 PM	11.94	12.01
1:14:10 PM	11.99	11.99
1:14:20 PM	12.05	11.98
1:14:30 PM	12.07	11.99

Timestamp	(CA-1 & 2) O2%	(CA-1 & 2) O2% Wet
1:14:40 PM	12.10	12.00
1:14:50 PM	12.10	11.99
1:15:00 PM	12.12	11.98
1:15:10 PM	12.13	11.98
1:15:20 PM	12.13	11.99
1:15:30 PM	12.15	12.01
1:15:40 PM	12.14	12.01
1:15:50 PM	12.15	12.01
1:16:00 PM	12.15	11.99
1:16:10 PM	12.16	12.00
1:16:20 PM	12.20	12.00
1:16:30 PM	12.16	18.88
1:16:40 PM	12.57	20.97
1:16:50 PM	19.27	20.97
1:17:00 PM	20.53	20.98
1:17:10 PM	20.78	20.98
1:17:20 PM	20.90	20.97
1:17:30 PM	20.95	20.96
1:17:40 PM	21.03	20.98
1:17:50 PM	21.06	20.96
1:18:00 PM	21.10	20.98
1:18:11 PM	21.11	20.96
1:18:20 PM	21.14	20.97
1:18:30 PM	21.15	21.00
1:18:40 PM	21.19	20.98
1:18:50 PM	21.18	20.98
1:19:00 PM	21.19	20.97
1:19:10 PM	21.23	20.98
1:19:20 PM	21.20	5.14
1:19:30 PM	21.04	5.05
1:19:40 PM	7.14	5.06
1:19:50 PM	6.12	5.05
1:20:00 PM	5.79	5.05
1:20:10 PM	5.62	5.06
1:20:20 PM	5.52	5.03
1:20:30 PM	5.43	5.04
1:20:40 PM	5.38	5.05
1:20:50 PM	5.31	5.06
1:21:00 PM	5.29	5.04
1:21:10 PM	5.25	5.04
1:21:20 PM	5.24	5.05
1:21:30 PM	5.20	5.04
1:21:40 PM	5.19	5.04
1:21:50 PM	5.16	5.04
1:22:00 PM	5.16	5.04
1:22:10 PM	5.15	5.03
1:22:20 PM	5.15	5.05
1:22:30 PM	5.15	5.06
1:22:40 PM	5.15	5.04
1:22:50 PM	5.15	5.04
1:23:00 PM	5.15	5.04

Timestamp	(CA-1 & 2) O2%	(CA-1 & 2) O2% Wet
1:23:11 PM	5.13	7.00
1:23:20 PM	5.13	11.99
1:23:30 PM	9.50	12.00
1:23:40 PM	11.68	12.00
1:23:50 PM	11.86	11.99
1:24:00 PM	11.95	12.01
1:24:10 PM	11.99	12.00
1:24:20 PM	12.02	11.99
1:24:30 PM	12.06	12.00
1:24:40 PM	12.06	11.99
1:24:50 PM	12.10	12.01
1:25:00 PM	12.11	12.00
1:25:10 PM	12.13	12.01
1:25:20 PM	12.14	11.99
1:25:30 PM	12.15	11.99
1:25:40 PM	12.15	12.01
1:25:50 PM	12.16	12.00
1:26:00 PM	12.15	12.00
1:26:10 PM	12.14	12.00
1:26:20 PM	12.16	11.42
1:26:30 PM	12.18	20.73
1:26:40 PM	12.73	20.96
1:26:50 PM	20.01	20.97
1:27:00 PM	20.64	21.00
1:27:10 PM	20.84	20.99
1:27:20 PM	20.93	21.00
1:27:30 PM	21.00	20.99
1:27:40 PM	21.05	21.00
1:27:50 PM	21.08	21.00
1:28:00 PM	21.11	20.99
1:28:10 PM	21.11	21.00
1:28:20 PM	21.15	20.99
1:28:30 PM	21.16	20.97
1:28:40 PM	21.17	20.98
1:28:50 PM	21.19	20.99
1:29:00 PM	21.19	20.96
1:29:10 PM	21.19	21.00
1:29:20 PM	21.20	20.97
1:29:30 PM	21.20	20.99
1:29:40 PM	21.20	21.01
1:29:50 PM	21.20	21.01
1:30:00 PM	21.20	21.00
1:30:10 PM	21.20	20.99
1:30:20 PM	21.20	20.90
1:30:30 PM	21.08	9.86
1:30:40 PM	17.77	9.69
1:30:50 PM	13.75	9.57
1:31:00 PM	13.46	9.59
1:31:10 PM	13.29	9.63
1:31:20 PM	13.24	9.57
1:31:30 PM	13.27	9.52

Timestamp	(CA-1 & 2) O2%	(CA-1 & 2) O2% Wet
1:31:40 PM	13.21	9.55
1:31:50 PM	13.14	9.51
1:32:00 PM	13.13	9.52
1:32:10 PM	13.11	9.51
1:32:20 PM	13.12	9.50
1:32:30 PM	13.09	9.51
1:32:40 PM	13.08	9.51
1:32:50 PM	13.10	9.51
1:33:00 PM	13.09	9.48
Average	12.69	12.20
Minimum	5.12	4.93
Maximum	21.71	21.01

SOLVAY SODA ASH JOINT VENTURE
UNIT 2 CALCINER NOX LINEARITY

Test Information

Test Date:	**6/15/2006**
Facility:	Solvay Soda Ash
Unit:	Calciner 2
Test Reason:	Initial Certification
Aborted:	No

Analyzer Information

Range:	High
Instrument Span:	400
Manufacturer:	California Analytical Instruments
Model:	650
Serial Number:	S07049

Low Gas Cylinder Number: CC-68355

Run No.	TIME	Reference Gas	CEMS Response	d_i
1	12:54 PM	103.60	107.80	-4.20
2	1:07 PM	103.60	107.67	-4.07
3	1:18 PM	103.60	107.67	-4.07

n	3
avg /d/	4.11
avg /RM/	103.60
avg /CEM/	107.71
Linearity Error	4.0
LIMIT	5.0%

Mid Gas Cylinder Number: AAL16337

Run No.	TIME	Reference Gas	CEMS Response	d_i
1	12:58 PM	221.00	218.84	2.16
2	1:10 PM	221.00	218.89	2.11
3	1:21 PM	221.00	218.88	2.12

n	3
avg /d/	2.13
avg /RM/	221.00
avg /CEM/	218.87
Linearity Error	1.0
LIMIT	5.0%

High Gas Cylinder Number: SA11830

Run No.	TIME	Reference Gas	CEMS Response	d_i
1	1:03 PM	364.00	366.72	-2.72
2	1:14 PM	364.00	365.99	-1.99
3	1:25 PM	364.00	366.45	-2.45

n	3
avg /d/	2.39
avg /RM/	364.00
avg /CEM/	366.39
Linearity Error	0.7
LIMIT	5.0%

Linearity Error (LE) Determination: $LE = (|R-A| / R) * 100$

R = Reference gas value

A = Mean of actual CEMS responses

Audit Data

SOLVAY SODA ASH JOINT VENTURE

Data for 6/15/2006 12:53:20 PM thru 6/15/2006 12:53:19 PM from '2006-06-15 12.53.cea'

Timestamp	(CA-2) NOx ppm	(CA-2) Stack Velocity ft/min	(CA-2) Stack Flow kdscf/hr	(CA-2) Heat Input Rate mmBtu/hr
12:53:20 PM	108.95	2513.60	4239.69	431.4
12:53:30 PM	108.60	2513.60	4239.69	430.2
12:53:40 PM	108.50	2513.60	4239.69	431.6
12:53:50 PM	108.08	2513.60	4239.00	432.8
12:54:00 PM	108.15	2514.09	4239.83	431.7
12:54:10 PM	107.83	2514.58	4240.66	431.3
12:54:20 PM	108.28	2514.58	4240.66	431.9
12:54:30 PM	107.88	2514.58	4240.66	432.2
12:54:40 PM	107.60	2515.07	4241.48	431.8
12:54:50 PM	107.43	2515.57	4242.33	433.2
12:55:00 PM	107.75	2515.57	4241.64	433.1
12:55:10 PM	107.28	2515.57	4241.64	432.7
12:55:20 PM	107.15	2516.55	4243.29	432.8
12:55:30 PM	107.05	2516.55	4243.29	433.0
12:55:40 PM	107.20	2516.55	4242.60	433.2
12:55:50 PM	106.93	2516.55	4242.60	433.2
12:56:00 PM	143.58	2517.05	4243.44	--
12:56:10 PM	202.98	2517.54	4244.27	--
12:56:20 PM	210.48	2517.54	4243.58	433.1
12:56:30 PM	218.28	2518.53	4245.25	433.7
12:56:40 PM	218.90	2518.53	4245.25	--
12:56:50 PM	218.48	2518.53	4245.25	--
12:57:00 PM	218.38	2519.51	4246.90	--
12:57:10 PM	218.25	2519.51	4246.90	--
12:57:20 PM	218.20	2519.51	4246.21	--
12:57:30 PM	218.33	2520.50	4247.88	--
12:57:40 PM	218.70	2520.50	4247.88	--
12:57:50 PM	218.70	2520.00	4246.35	--
12:58:00 PM	218.03	2520.00	4247.04	--
12:58:10 PM	218.48	2521.48	4248.85	--
12:58:20 PM	219.18	2521.48	4248.85	--
12:58:30 PM	219.68	2521.48	4248.16	--
12:58:40 PM	218.60	2522.47	4249.82	--
12:58:50 PM	218.33	2522.47	4249.82	--
12:59:00 PM	218.78	2522.47	4249.82	--
12:59:10 PM	218.58	2522.47	4249.13	--
12:59:20 PM	219.10	2523.45	4250.78	--
12:59:30 PM	218.60	2523.45	4250.09	--
12:59:40 PM	218.40	2523.45	4250.09	--
12:59:50 PM	295.70	2524.44	4251.76	--
1:00:00 PM	358.18	2524.44	4251.76	--
1:00:10 PM	360.65	2524.44	4251.76	--
1:00:20 PM	364.03	2524.44	4251.76	434.5
1:00:30 PM	365.08	2525.43	4253.43	--
1:00:40 PM	364.53	2525.43	4252.74	434.6
1:00:50 PM	363.90	2525.43	4252.74	434.6

Timestamp	(CA-2) NOx ppm	(CA-2) Stack Velocity ft/min	(CA-2) Stack Flow kdscf/hr	(CA-2) Heat Input Rate mmBtu/hr
1:01:00 PM	365.38	2525.92	4253.56	434.5
1:01:10 PM	365.58	2526.41	4254.39	--
1:01:20 PM	365.08	2526.41	4248.89	--
1:01:30 PM	365.48	2526.41	4253.70	--
1:01:40 PM	365.80	2527.40	4255.37	--
1:01:50 PM	365.33	2527.40	4255.37	--
1:02:00 PM	365.75	2527.40	4254.67	434.6
1:02:10 PM	366.33	2527.40	4254.67	--
1:02:20 PM	365.80	2528.38	4256.32	--
1:02:30 PM	366.43	2528.38	4256.32	--
1:02:40 PM	365.90	2528.38	4256.32	435.0
1:02:50 PM	366.83	2528.38	4256.32	--
1:03:00 PM	366.33	2529.37	4257.99	--
1:03:10 PM	366.15	2529.37	4257.30	--
1:03:20 PM	367.60	2529.37	4251.80	--
1:03:30 PM	366.68	2529.37	4257.30	--
1:03:40 PM	366.53	2530.36	4258.27	--
1:03:50 PM	366.20	2530.36	4252.77	434.6
1:04:00 PM	367.18	2530.36	4258.27	--
1:04:10 PM	274.50	2530.36	4258.27	--
1:04:20 PM	119.63	2530.36	4258.27	--
1:04:30 PM	113.03	2531.34	4259.92	--
1:04:40 PM	110.95	2531.34	4259.92	--
1:04:50 PM	111.15	2531.34	4254.42	434.8
1:05:00 PM	110.75	2531.34	4259.92	--
1:05:10 PM	109.20	2532.33	4261.59	--
1:05:20 PM	108.90	2532.33	4255.39	434.9
1:05:30 PM	109.68	2532.33	4261.59	--
1:05:40 PM	109.80	2532.33	4260.90	--
1:05:50 PM	108.73	2533.31	4256.35	--
1:06:00 PM	108.33	2533.31	4261.85	--
1:06:10 PM	108.30	2533.31	4261.85	--
1:06:20 PM	108.30	2533.31	4261.16	--
1:06:30 PM	108.08	2534.30	4262.83	--
1:06:40 PM	108.18	2534.30	4262.83	--
1:06:50 PM	108.30	2534.30	4262.83	--
1:07:00 PM	107.85	2534.30	4262.83	--
1:07:10 PM	107.33	2535.29	4263.80	--
1:07:20 PM	108.03	2535.29	4263.80	--
1:07:30 PM	107.95	2535.29	4263.80	--
1:07:40 PM	107.30	2536.27	4264.75	--
1:07:50 PM	107.70	2536.27	4259.24	--
1:08:00 PM	107.68	2536.27	4264.75	--
1:08:10 PM	109.98	2537.26	4266.42	--
1:08:20 PM	191.00	2537.26	4260.21	--
1:08:30 PM	211.33	2537.26	4265.72	--
1:08:40 PM	217.33	2537.75	4265.85	--
1:08:50 PM	218.93	2538.24	4261.16	--
1:09:00 PM	218.33	2538.24	4266.68	--
1:09:10 PM	218.50	2538.24	4265.98	--

Timestamp	(CA-2) NOx ppm	(CA-2) Stack Velocity ft/min	(CA-2) Stack Flow kdscf/hr	(CA-2) Heat Input Rate mmBtu/hr
1:09:20 PM	219.30	2539.23	4262.13	--
1:09:30 PM	218.48	2539.23	4267.65	--
1:09:40 PM	218.40	2539.23	4266.95	--
1:09:50 PM	219.00	2539.23	4261.44	--
1:10:00 PM	218.90	2540.22	4267.92	--
1:10:10 PM	218.78	2540.22	4267.92	--
1:10:20 PM	218.35	2540.22	4262.41	--
1:10:30 PM	219.28	2540.22	4261.71	--
1:10:40 PM	219.30	2540.22	4266.53	--
1:10:50 PM	218.88	2541.20	4262.66	--
1:11:00 PM	218.75	2541.20	4267.48	--
1:11:10 PM	218.75	2541.20	4266.79	--
1:11:20 PM	218.45	2541.20	4261.28	--
1:11:30 PM	219.43	2541.20	4266.09	--
1:11:40 PM	218.98	2541.20	4266.09	--
1:11:50 PM	218.63	2542.19	4261.55	--
1:12:00 PM	218.85	2542.19	4266.37	--
1:12:10 PM	218.85	2542.19	4265.67	--
1:12:20 PM	294.58	2542.19	4260.16	435.4
1:12:30 PM	358.10	2542.19	4265.67	436.0
1:12:40 PM	362.88	2542.19	4264.28	--
1:12:50 PM	363.85	2542.19	4258.77	435.2
1:13:00 PM	364.03	2543.17	4265.92	435.8
1:13:10 PM	364.80	2543.17	4265.23	435.9
1:13:20 PM	364.55	2543.17	4259.02	--
1:13:30 PM	365.78	2543.17	4263.84	--
1:13:40 PM	365.60	2543.17	4263.84	--
1:13:50 PM	365.48	2543.67	4263.29	--
1:14:00 PM	367.10	2543.17	4262.45	--
1:14:10 PM	365.33	2543.17	4262.45	435.6
1:14:20 PM	365.30	2543.67	4261.89	435.6
1:14:30 PM	366.63	2544.16	4262.02	--
1:14:40 PM	365.85	2544.16	4262.02	--
1:14:50 PM	366.15	2544.16	4261.32	--
1:15:00 PM	366.65	2544.16	4260.63	--
1:15:10 PM	366.20	2544.16	4259.93	--
1:15:20 PM	366.20	2544.16	4259.24	435.1
1:15:30 PM	273.70	2544.65	4259.36	435.3
1:15:40 PM	129.68	2544.16	4258.54	--
1:15:50 PM	111.38	2544.16	4257.85	--
1:16:00 PM	112.03	2544.16	4257.15	--
1:16:10 PM	111.40	2544.16	4257.15	--
1:16:20 PM	109.58	2544.16	4255.76	--
1:16:30 PM	109.28	2544.16	4255.06	--
1:16:40 PM	109.25	2544.16	4255.06	--
1:16:50 PM	108.83	2544.16	4254.37	--
1:17:00 PM	108.60	2544.16	4253.67	--
1:17:10 PM	109.35	2544.16	4253.67	434.7
1:17:20 PM	109.18	2544.16	4252.98	--
1:17:30 PM	107.78	2544.16	4252.28	--

Timestamp	(CA-2) NOx ppm	(CA-2) Stack Velocity ft/min	(CA-2) Stack Flow kdscf/hr	(CA-2) Heat Input Rate mmBtu/hr
1:17:40 PM	107.75	2544.16	4252.28	--
1:17:50 PM	108.45	2544.16	4251.59	--
1:18:00 PM	107.95	2544.16	4250.89	--
1:18:10 PM	107.80	2544.16	4250.19	--
1:18:21 PM	108.00	2544.16	4249.50	434.3
1:18:30 PM	107.90	2544.16	4248.80	--
1:18:40 PM	107.15	2544.16	4248.80	--
1:18:50 PM	107.20	2544.16	4248.11	--
1:19:00 PM	107.95	2544.16	4247.41	--
1:19:10 PM	107.60	2544.16	4246.72	--
1:19:20 PM	108.40	2544.16	4246.72	--
1:19:30 PM	189.78	2544.16	4246.72	--
1:19:40 PM	213.58	2544.16	4246.02	--
1:19:50 PM	218.28	2544.16	4245.33	--
1:20:00 PM	218.60	2544.16	4245.33	--
1:20:10 PM	218.65	2544.16	4244.63	--
1:20:20 PM	218.78	2544.16	4243.93	--
1:20:30 PM	218.63	2544.16	4243.93	--
1:20:40 PM	218.58	2544.16	4243.24	--
1:20:50 PM	218.65	2544.16	4243.24	--
1:21:00 PM	218.60	2543.17	4240.20	--
1:21:10 PM	218.73	2543.17	4240.20	--
1:21:20 PM	219.00	2543.17	4240.20	--
1:21:30 PM	219.40	2543.67	4240.33	--
1:21:40 PM	218.85	2543.17	4238.81	--
1:21:50 PM	218.73	2543.17	4238.81	--
1:22:00 PM	218.55	2543.17	4238.11	--
1:22:10 PM	218.85	2543.17	4238.11	--
1:22:20 PM	219.08	2543.17	4237.42	--
1:22:30 PM	219.45	2543.17	4236.72	--
1:22:40 PM	230.23	2543.17	4236.72	--
1:22:50 PM	341.48	2542.19	4234.39	--
1:23:00 PM	360.13	2542.19	4233.70	--
1:23:10 PM	363.48	2542.19	4233.70	--
1:23:20 PM	365.45	2542.19	4233.70	--
1:23:30 PM	363.93	2542.19	4233.00	--
1:23:40 PM	364.58	2542.19	4233.00	432.6
1:23:50 PM	364.38	2542.19	4232.31	--
1:24:00 PM	365.80	2542.19	4232.31	--
1:24:10 PM	365.83	2542.19	4232.31	432.3
1:24:20 PM	365.55	2541.20	4229.96	--
1:24:30 PM	366.63	2541.20	4229.27	--
1:24:40 PM	365.95	2541.20	4229.27	432.2
1:24:50 PM	365.78	2541.20	4228.57	--
1:25:00 PM	365.98	2541.20	4228.57	--
1:25:11 PM	367.03	2541.20	4227.88	432.1
1:25:20 PM	365.78	2541.20	4227.88	--
1:25:30 PM	366.40	2541.20	4227.19	--
1:25:40 PM	366.28	2540.22	4225.55	--
1:25:50 PM	366.80	2540.22	4225.55	431.6

Timestamp	(CA-2) NOx ppm	(CA-2) Stack Velocity ft/min	(CA-2) Stack Flow kdscf/hr	(CA-2) Heat Input Rate mmBtu/hr
1:26:00 PM	366.43	2540.22	4224.86	--
1:26:10 PM	268.93	2540.22	4224.17	248.6
1:26:20 PM	143.80	2540.22	4224.17	186.2
1:26:30 PM	138.15	2540.22	4224.17	181.7
1:26:40 PM	138.88	2540.22	4223.47	182.2
1:26:50 PM	139.03	2539.23	4221.83	182.8
1:27:00 PM	138.53	2539.23	4221.13	182.1
1:27:10 PM	137.05	2539.23	4221.13	180.3
1:27:20 PM	137.05	2539.23	4220.44	181.9
1:27:30 PM	135.49	2539.23	4220.44	184.4
1:27:40 PM	135.52	2539.23	4220.44	182.1
1:27:50 PM	133.82	2539.23	4219.74	181.5
1:28:00 PM	133.87	2539.23	4219.05	183.1
1:28:10 PM	135.82	2538.24	4217.40	183.8
1:28:20 PM	134.92	2538.24	4217.40	181.6
1:28:30 PM	133.49	2538.24	4216.71	181.5
1:28:40 PM	133.07	2538.24	4216.71	180.7
1:28:50 PM	132.19	2538.24	4216.02	178.2
1:29:00 PM	131.87	2538.24	4216.02	180.1
1:29:10 PM	133.24	2538.24	4216.02	180.5
1:29:20 PM	133.74	2538.24	4216.02	179.9
1:29:30 PM	132.97	2538.24	4215.32	180.2
1:29:40 PM	133.82	2537.26	4213.69	180.0
1:29:50 PM	133.07	2537.26	4213.00	180.3
1:30:00 PM	133.39	2537.26	4213.00	181.6
1:30:10 PM	133.52	2537.26	4212.31	180.7
1:30:20 PM	133.34	2537.26	4212.31	180.3
1:30:30 PM	132.47	2537.26	4212.31	179.5
1:30:40 PM	131.79	2537.26	4212.31	179.3
1:30:50 PM	132.34	2537.26	4211.61	179.3
1:31:00 PM	131.89	2537.26	4211.61	178.4
1:31:10 PM	131.24	2536.27	4209.28	177.7
1:31:20 PM	131.54	2536.27	4209.28	177.9
1:31:30 PM	131.92	2536.27	4209.28	178.7
1:31:40 PM	133.27	2536.27	4209.28	180.0
1:31:50 PM	133.69	2536.27	4209.28	179.8
1:32:00 PM	132.39	2536.27	4208.58	177.9
1:32:10 PM	132.77	2536.27	4208.58	178.3
1:32:20 PM	133.09	2536.27	4207.89	179.7
1:32:30 PM	133.89	2535.29	4206.26	179.4
1:32:40 PM	133.22	2535.29	4206.26	180.1
1:32:50 PM	133.27	2535.29	4206.26	179.9
1:33:00 PM	133.74	2535.29	4205.57	178.8
1:33:10 PM	133.02	2535.29	4205.57	179.8
1:33:20 PM	132.79	2535.29	4205.57	179.0
1:33:30 PM	131.84	2534.30	4203.23	176.2
1:33:40 PM	131.77	2534.30	4203.23	177.3
1:33:50 PM	132.99	2534.30	4202.54	179.5
1:34:00 PM	134.04	2534.30	4202.54	179.3
1:34:10 PM	133.39	2534.30	4202.54	180.1

Timestamp	(CA-2) NOx ppm	(CA-2) Stack Velocity ft/min	(CA-2) Stack Flow kdscf/hr	(CA-2) Heat Input Rate mmBtu/hr
1:34:20 PM	133.32	2534.30	4202.54	179.5
1:34:30 PM	133.19	2533.31	4200.90	179.6
1:34:40 PM	132.99	2533.31	4200.90	179.0
1:34:50 PM	132.24	2533.31	4200.21	178.2
1:35:00 PM	132.59	2533.31	4200.21	179.8
1:35:10 PM	133.02	2533.31	4199.51	179.0
1:35:20 PM	132.02	2533.31	4199.51	179.2
1:35:30 PM	133.27	2532.33	4197.89	179.1
1:35:40 PM	131.77	2532.33	4197.89	177.9
1:35:50 PM	130.82	2532.33	4197.89	176.2
1:36:00 PM	130.22	2532.33	4197.89	175.8
1:36:10 PM	131.82	2532.33	4197.89	177.9
1:36:20 PM	132.87	2532.33	4197.20	178.0
1:36:30 PM	133.27	2532.33	4197.20	177.0
1:36:40 PM	132.82	2531.34	4195.56	179.2
1:36:50 PM	133.44	2531.34	4194.87	178.5
1:37:00 PM	134.79	2531.34	4194.87	179.2
1:37:10 PM	132.99	2531.34	4194.87	178.5
1:37:20 PM	133.29	2531.34	4194.87	176.9
1:37:30 PM	133.34	2531.34	4194.17	178.7
1:37:40 PM	133.47	2531.34	4194.17	179.1
1:37:50 PM	133.69	2531.34	4194.17	178.1
1:38:00 PM	133.02	2531.34	4194.17	177.7
1:38:10 PM	132.02	2531.34	4193.48	176.4
1:38:20 PM	131.12	2530.36	4191.86	175.3
1:38:30 PM	131.77	2530.36	4191.86	176.6
1:38:40 PM	133.17	2530.36	4191.86	178.2
1:38:50 PM	132.59	2530.36	4191.86	177.6
Average	204.05	2534.77	4238.93	271.1
Minimum	106.93	2513.60	4191.86	175.3
Maximum	367.60	2544.65	4267.92	436.0

SOLVAY SODA ASH JOINT VENTURE
UNIT 2 CALCINER O2 LINEARITY

Test Information	
Test Date:	**6/16/2006**
Facility:	Solvay Soda Ash
Unit:	Calciner 2
Test Reason:	Initial Certification
Aborted:	No

Analyzer Information	
Range:	High
Instrument Span:	25
Manufacturer:	California Analytical Instruments
Model:	650
Serial Number:	S07049

Low Gas Cylinder Number: ALM034985

Run No.	TIME	Reference Gas	CEMS Response	d_i
1	1:40 PM	5.11	5.11	0.00
2	1:49 PM	5.11	5.14	-0.03
3	1:59 PM	5.11	5.15	-0.04

n	3
avg /d/	0.02
avg /RM/	5.11
avg /CEM/	5.13
Linearity Error	**0.5**
LIMIT	5.0%

Mid Gas Cylinder Number: CC178815

Run No.	TIME	Reference Gas	CEMS Response	d_i
1	1:43 PM	11.94	12.07	-0.13
2	1:52 PM	11.94	12.08	-0.14
3	2:02 PM	11.94	12.08	-0.14

n	3
avg /d/	0.14
avg /RM/	11.94
avg /CEM/	12.08
Linearity Error	**1.1**
LIMIT	5.0%

High Gas Cylinder Number: INSTR. AIR

Run No.	TIME	Reference Gas	CEMS Response	d_i
1	1:46 PM	20.90	20.95	-0.05
2	1:55 PM	20.90	21.11	-0.21
3	2:06 PM	20.90	21.13	-0.23

n	3
avg /d/	0.16
avg /RM/	20.90
avg /CEM/	21.06
Linearity Error	**0.8**
LIMIT	5.0%

Linearity Error (LE) Determination: $LE = (|R-A| / R) * 100$

R = Reference gas value

A = Mean of actual CEMS responses

Audit Data

SOLVAY SODA ASH JOINT VENTURE

Data for 6/16/2006 1:38:20 PM thru 6/16/2006 1:38:19 PM from '2006-06-16 13.38.cea'

Timestamp	(CA-1 & 2) O2%	(CA-2) O2%	(CA-2) Stack Velocity ft/min	(CA-2) Stack Flow kdscf/hr	(CA-2) Heat Input Rate mmBtu/hr
1:38:20 PM	12.95	6.44	2466.84	4136.48	292.6
1:38:30 PM	12.98	5.26	2466.84	4136.48	316.5
1:38:40 PM	12.97	5.16	2466.84	4136.48	318.5
1:38:50 PM	12.93	5.11	2466.84	4135.81	319.5
1:39:00 PM	12.97	5.14	2466.84	4135.81	318.9
1:39:10 PM	12.96	5.20	2466.84	4135.13	317.6
1:39:20 PM	13.00	5.16	2466.84	4135.13	318.4
1:39:30 PM	12.95	5.09	2467.34	4135.97	319.9
1:39:40 PM	12.95	5.11	2467.34	4135.97	319.5
1:39:50 PM	12.99	5.18	2467.34	4135.29	318.0
1:40:00 PM	13.00	5.15	2467.34	4135.29	318.6
1:40:10 PM	13.02	5.15	2467.34	4135.29	318.6
1:40:20 PM	13.03	5.08	2467.34	4135.29	320.1
1:40:30 PM	13.04	5.13	2466.84	4133.78	318.9
1:40:40 PM	12.94	5.11	2466.35	4132.96	319.3
1:40:50 PM	12.97	5.10	2466.84	4133.78	319.5
1:41:00 PM	12.98	5.06	2466.84	4133.10	320.3
1:41:10 PM	12.93	5.10	2466.84	4133.10	319.5
1:41:20 PM	12.92	5.10	2466.84	4133.10	319.5
1:41:30 PM	12.94	5.08	2466.84	4133.10	319.9
1:41:40 PM	12.91	5.45	2466.84	4127.77	312.0
1:41:50 PM	12.93	11.27	2466.84	4133.10	194.7
1:42:00 PM	12.90	11.96	2466.35	4132.28	180.7
1:42:10 PM	12.88	12.00	2466.84	4132.43	179.9
1:42:20 PM	12.90	12.03	2466.84	4132.43	179.3
1:42:30 PM	12.98	12.05	2466.35	4130.93	178.9
1:42:40 PM	12.90	12.07	2466.84	4131.75	178.5
1:42:50 PM	12.91	12.05	2466.84	4131.08	178.9
1:43:00 PM	12.92	12.06	2466.84	4131.08	178.7
1:43:10 PM	12.90	12.07	2466.84	4131.08	178.5
1:43:20 PM	12.91	12.07	2466.84	4131.08	178.5
1:43:30 PM	12.89	12.05	2466.84	4131.08	178.9
1:43:40 PM	12.88	12.07	2466.84	4130.40	178.4
1:43:50 PM	12.89	12.10	2466.84	4130.40	177.8
1:44:00 PM	12.88	12.08	2466.84	4130.40	178.2
1:44:10 PM	12.83	12.05	2466.84	4130.40	178.8
1:44:20 PM	12.89	12.67	2466.84	4130.40	166.3
1:44:30 PM	12.88	19.46	2466.84	4129.73	29.1
1:44:40 PM	12.87	20.72	2466.84	4124.40	--
1:44:50 PM	12.92	20.74	2466.84	4129.73	--
1:45:00 PM	12.93	20.75	2466.84	4129.73	--
1:45:10 PM	12.86	20.86	2466.84	4129.73	--
1:45:20 PM	12.91	20.90	2466.84	4129.73	--
1:45:30 PM	12.93	20.88	2466.84	4129.05	--
1:45:40 PM	12.92	20.87	2467.34	4123.89	--
1:45:50 PM	12.92	20.92	2467.83	4130.03	--

Timestamp	(CA-1 & 2) O2%	(CA-2) O2%	(CA-2) Stack Velocity ft/min	(CA-2) Stack Flow kdscf/hr	(CA-2) Heat Input Rate mmBtu/hr
1:46:00 PM	12.86	20.91	2467.34	4123.89	--
1:46:10 PM	12.85	20.89	2467.34	4129.21	--
1:46:20 PM	12.83	20.94	2467.83	4130.03	--
1:46:30 PM	12.83	20.96	2467.34	4123.89	--
1:46:40 PM	12.79	20.94	2467.34	4123.21	--
1:46:50 PM	12.85	20.96	2467.34	4128.54	--
1:47:00 PM	12.87	20.99	2467.83	4129.36	--
1:47:10 PM	12.89	20.97	2467.34	4128.54	--
1:47:20 PM	12.88	20.96	2468.82	4131.01	--
1:47:30 PM	12.84	20.95	2468.32	4130.18	--
1:47:40 PM	12.82	14.85	2468.32	4130.18	122.2
1:47:50 PM	12.84	5.95	2468.82	4131.01	302.1
1:48:00 PM	12.88	5.43	2468.32	4124.85	312.2
1:48:10 PM	12.70	5.38	2468.32	4129.50	313.5
1:48:20 PM	12.69	5.22	2468.32	4129.50	316.8
1:48:30 PM	12.71	5.16	2468.32	4129.50	318.0
1:48:40 PM	12.67	5.23	2468.82	4130.34	316.6
1:48:50 PM	12.65	5.23	2468.32	4128.83	316.5
1:49:00 PM	12.68	5.17	2468.82	4129.66	317.8
1:49:10 PM	12.67	5.12	2469.80	4131.30	318.9
1:49:20 PM	12.72	5.18	2469.80	4131.30	317.7
1:49:30 PM	12.81	5.15	2469.80	4125.97	317.9
1:49:40 PM	12.80	5.11	2469.80	4130.63	319.1
1:49:50 PM	12.78	5.15	2469.80	4130.63	318.3
1:50:00 PM	12.79	5.14	2469.31	4124.48	318.0
1:50:10 PM	12.71	5.11	2469.31	4129.81	319.0
1:50:20 PM	12.73	5.11	2469.80	4130.63	319.1
1:50:30 PM	12.79	5.16	2469.80	4129.95	318.0
1:50:40 PM	12.77	8.42	2469.80	4129.95	252.2
1:50:50 PM	12.76	11.82	2469.80	4129.95	183.5
1:51:00 PM	12.75	12.02	2469.80	4129.95	179.4
1:51:10 PM	12.73	12.05	2469.31	4129.13	178.8
1:51:20 PM	12.75	12.09	2469.80	4129.95	178.0
1:51:30 PM	12.75	12.09	2470.79	4126.27	177.8
1:51:40 PM	12.77	12.06	2470.79	4125.60	178.4
1:51:50 PM	12.82	12.09	2470.79	4130.93	178.0
1:52:00 PM	12.86	12.09	2470.79	4130.93	178.0
1:52:10 PM	12.80	12.09	2470.79	4130.25	178.0
1:52:20 PM	12.74	12.07	2470.30	4129.43	178.4
1:52:30 PM	12.78	12.08	2470.30	4124.10	178.0
1:52:40 PM	12.78	12.07	2470.79	4124.92	178.2
1:52:50 PM	12.78	12.08	2470.30	4124.10	178.0
1:53:00 PM	12.83	12.08	2470.30	4124.10	178.0
1:53:10 PM	12.79	12.07	2470.30	4123.43	178.1
1:53:20 PM	12.79	12.07	2470.30	4123.43	178.1
1:53:30 PM	12.80	12.64	2470.79	4124.25	166.7
1:53:40 PM	12.78	19.81	2470.79	4124.25	22.0
1:53:50 PM	12.81	20.93	2470.79	4124.25	--
1:54:00 PM	12.79	21.05	2471.78	4125.90	--
1:54:10 PM	12.80	21.04	2471.78	4125.90	--

Timestamp	(CA-1 & 2) O2%	(CA-2) O2%	(CA-2) Stack Velocity ft/min	(CA-2) Stack Flow kdscf/hr	(CA-2) Heat Input Rate mmBtu/hr
1:54:20 PM	12.86	21.01	2471.78	4125.90	--
1:54:30 PM	12.85	21.04	2471.78	4125.90	--
1:54:40 PM	12.85	21.12	2471.78	4125.90	--
1:54:50 PM	12.81	21.09	2471.78	4125.90	--
1:55:00 PM	12.86	21.04	2471.78	4125.90	--
1:55:10 PM	12.83	21.09	2472.27	4126.04	--
1:55:20 PM	12.80	21.13	2472.76	4126.86	--
1:55:30 PM	12.80	21.10	2472.76	4126.86	--
1:55:40 PM	12.80	21.09	2472.76	4126.18	--
1:55:50 PM	12.84	21.14	2472.76	4126.18	--
1:56:00 PM	12.86	21.13	2472.76	4126.18	--
1:56:10 PM	12.84	21.12	2473.75	4127.84	--
1:56:20 PM	12.88	21.13	2473.75	4127.84	--
1:56:30 PM	12.91	21.14	2473.75	4127.84	--
1:56:40 PM	12.93	18.15	2473.75	4127.84	55.5
1:56:50 PM	12.95	7.29	2471.74	4129.49	275.0
1:57:00 PM	12.94	5.39	2474.25	4127.99	313.2
1:57:10 PM	12.90	5.18	2474.25	4127.99	317.5
1:57:20 PM	12.90	5.30	2474.74	4128.81	315.1
1:57:30 PM	12.94	5.33	2475.73	4130.46	314.6
1:57:40 PM	12.89	5.20	2475.73	4130.46	317.3
1:57:50 PM	12.85	5.13	2475.73	4129.79	318.6
1:58:00 PM	12.86	5.20	2476.22	4130.60	317.3
1:58:10 PM	12.83	5.19	2476.22	4130.60	317.5
1:58:20 PM	12.85	5.15	2476.71	4131.42	318.3
1:58:30 PM	12.82	5.15	2476.71	4131.42	318.3
1:58:40 PM	12.81	5.17	2477.21	4132.25	318.0
1:58:50 PM	12.82	5.13	2477.70	4133.07	318.9
1:59:00 PM	12.92	5.12	2478.69	4134.05	319.2
1:59:10 PM	12.91	5.20	2478.69	4134.05	317.5
1:59:20 PM	12.90	5.18	2478.69	4134.05	317.9
1:59:30 PM	12.91	5.11	2479.68	4135.70	319.5
1:59:40 PM	12.87	5.10	2479.68	4135.70	319.7
1:59:50 PM	12.95	5.16	2480.66	4137.33	318.6
2:00:00 PM	12.95	5.13	2480.66	4137.33	319.2
2:00:10 PM	12.97	5.08	2480.66	4136.65	320.2
2:00:20 PM	12.94	5.13	2481.65	4138.30	319.3
2:00:30 PM	12.95	5.13	2481.65	4137.62	319.2
2:00:40 PM	12.94	8.76	2481.64	4139.28	245.8
2:00:50 PM	12.93	11.74	2481.64	4139.28	185.5
2:01:00 PM	12.96	12.02	2482.62	4140.91	179.9
2:01:10 PM	12.95	12.07	2482.62	4140.91	178.9
2:01:20 PM	12.96	12.07	2482.12	4136.39	178.7
2:01:30 PM	13.00	12.03	2483.61	4141.88	179.7
2:01:40 PM	12.93	12.04	2483.60	4143.53	179.6
2:01:50 PM	12.91	12.07	2483.60	4143.53	179.0
2:02:00 PM	12.95	12.08	2483.09	4138.31	178.6
2:02:10 PM	12.91	12.07	2484.59	4144.50	179.0
2:02:20 PM	12.92	12.08	2484.57	4146.14	178.9
2:02:30 PM	12.96	12.08	2484.57	4146.14	178.9

Timestamp	(CA-1 & 2) O2%	(CA-2) O2%	(CA-2) Stack Velocity ft/min	(CA-2) Stack Flow kdscf/hr	(CA-2) Heat Input Rate mmBtu/hr
2:02:40 PM	12.93	12.08	24[illegible]3.56	4147.79	179.0
2:02:50 PM	12.94	12.09	24[illegible]3.56	4147.10	178.7
2:03:00 PM	12.95	12.09	24[illegible]0.55	4143.39	178.6
2:03:10 PM	12.94	12.09	24[illegible]0.55	4148.07	178.8
2:03:20 PM	12.97	12.09	24[illegible]0.53	4149.71	178.9
2:03:30 PM	12.99	12.10	24[illegible]0.53	4144.35	178.4
2:03:40 PM	13.00	15.37	24[illegible].02	4151.51	112.3
2:03:50 PM	13.00	20.45	24[illegible].02	4151.51	--
2:04:00 PM	12.99	20.90	24[illegible].52	4150.68	--
2:04:10 PM	12.96	20.96	24[illegible].51	4152.32	--
2:04:20 PM	12.93	21.08	24[illegible].51	4151.64	--
2:04:30 PM	12.95	21.06	24[illegible].99	4154.11	--
2:04:40 PM	12.94	21.00	24[illegible].99	4153.43	--
2:04:50 PM	12.93	21.03	24[illegible].48	4154.24	--
2:05:00 PM	12.91	21.09	24[illegible].48	4154.24	--
2:05:10 PM	12.88	21.09	24[illegible].48	4154.24	--
2:05:20 PM	12.83	21.06	24[illegible].96	4156.02	--
2:05:30 PM	12.86	21.08	24[illegible].47	4155.21	--
2:05:40 PM	12.87	21.11	24[illegible].95	4156.99	--
2:05:50 PM	12.89	21.07	24[illegible].46	4156.17	--
2:06:00 PM	12.95	21.10	24[illegible].46	4156.17	--
2:06:10 PM	12.95	21.16	24[illegible].94	4157.96	--
2:06:20 PM	12.95	21.11	24[illegible].94	4158.64	--
2:06:30 PM	12.94	21.10	24[illegible].43	4158.77	--
2:06:40 PM	12.91	21.11	24[illegible].43	4158.09	--
2:06:50 PM	12.90	21.14	24[illegible].43	4158.09	--
2:07:00 PM	12.94	21.13	24[illegible].91	4159.87	--
Average	12.88	12.62	24[illegible].07	4134.53	246.5
Minimum	12.65	5.06	24[illegible].35	4123.21	22.0
Maximum	13.04	21.16	24[illegible].91	4159.87	320.3

APPENDIX 4

COMS CERTIFICATION TEST DOCUMENTS

TELEDYNE
INSTRUMENTS
Monitor Labs
A Teledyne Technologies Company

MANUFACTURER'S CERTIFICATE of CONFORMANCE with DESIGN SPECIFICATIONS

per

40CFR60, Appendix B, Performance Specification 1

Dated August 2000

LightHawk 560

CONTINUOUS OPACITY MONITORING SYSTEM
(COMS)

for:

Solvay

ST-1

SERIAL NUMBER: 5600912

This document is provided by TELEDYNE *Monitor Labs Inc*., an original manufacturer of opacity monitoring systems that are intended to comply with standards of performance established by the US EPA 40CFR60, Appendix B, Performance Specification 1, Performance Specifications for Opacity Monitors. This EPA specification references ASTM Standard Practice D6216-03 which may be used by the manufacturer to demonstrate that the designated opacity monitor meets those performance requirements that can be tested and verified by the supplier prior to field installation. Data in this summary document (Part 1) have been generated in compliance with the procedures and specifications shown in the ASTM Standard Practice, D6216. These data confirm that the designated opacity monitor meets or exceeds the requirements of this Standard Practice.

I. MANUFACTURER/SUPPLIER INFORMATION

Company Name: TELEDYNE *Monitor Labs*
Location: 5310 N. Pioneer Rd. Gibsonia, PA

II. OPACITY MONITOR INFORMATION

Model: *LightHawk 560*
Transceiver type: STD
Transceiver serial no.: 5600912
Reflector type: 7mm
Reflector serial no.: 5600912
Control unit serial no.: 5600912
System software version: 1.09

Component software versions:

	68332	NEURON
Transceiver	1.11	1.50
Remote	1.13	1.51
Multi I/O		1.50

III. USER INFORMATION

Company: Solvay
Plant: Green River, WY
Process/boiler:
Location: ST-1

IV. INSTALLATION INFORMATION

Monitoring pathlength (depth of effluent)	3.658	meters	12.00	ft.
Installation pathlength (flange to flange)	3.962	meters	13.00	ft.
Emission outlet pathlength (stack exit)	3.658	meters	12.00	ft.
PLCF	1.000			
Facility opacity standard, % opacity	20.0			
Opacity full scale, % opacity	100			

PART I- DESIGN AND PERFORMANCE SPECIFICATIONS-TESTED AT MANUFACTURER'S FACILITY

Conformance with design specifications is demonstrated by testing two separate opacity monitors, each of which is representative of standard production. One opacity monitor is selected and tested annually and the other is selected from either a production lot of instruments not to exceed 20 in size, or from monthly production, and tested in accordance with procedures described in the Standard Practice D 6216. The tests associated with each of the above selected analyzers is required to be repeated anytime there is a critical component change that is substantial, hardware or software change, or manufacturing process change that could affect performance with respect to said design specifications. The test data derived from each of the above two described analyzers is summarized below.

1. Design Specifications Verified Through Tests Prescribed For an Annually, or More Often, Selected Opacity Monitor

The opacity monitor that was tested to demonstrate the following design parameters was selected on the basis of an annual selection __X__, or following a major change in the design or construction of the monitor ____.

OPACITY MONITOR INFORMATION

Model	*LightHawk 560*
Transceiver type	STD
Transceiver serial no.	5600821
Reflector type	7mm
Reflector serial no.	5600821t
Control unit serial no.	5600821
System software version	1.09

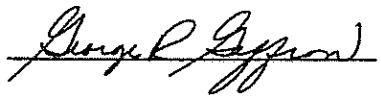
Component software versions:

	68332	NEURON
Transceiver	1.11	1.50
Remote	1.13	1.51
Multi I/O		1.50

TESTS PERFORMED BY:

J. Spade DATE: 5/26/2005

TEST DATA REVIEWED AND CERTIFIED BY:



DATE: 5/26/2005

George R. Gaffron

1.1 *Spectral Response*

Data listed below were obtained by calculation __X__, or by actual measurement using a monochrometer ____. A description of either the calculation or the measurement test set up are included in attachment A.

Parameter	Specification	Actual Test Result
Peak response	Between 500-600	533 nm
Mean response	Between 500-600	532.6 nm
Max response beyond 700nm	Less than 10% of peak	0.0 %
Max response less than 400nm	Less than 10% of peak	0.0 %

1.2 *Thermal Stability*

Parameter	Specification	Actual Test Result
Tested Range, min. temp	Mfgr specified, Deg C (F)	-31.1 C (-24 F)
Tested Range, max. temp	Mfgr specified, Deg C (F)	61.7 C (143 F)
Nominal measurement value	10-20% opacity	14.59 %
Measurement drift, max deviation from nominal	≤ 2% opacity/40 deg F	0.53 %
Zero drift from nominal without compensation	≤ 2% opacity/40 deg F	0.73 %
Zero drift from nominal with compensation	≤ 2% opacity/40 deg F	N/A
Upscale drift from nominal without compensation	≤ 2% opacity/40 deg F	0.67 %
Upscale drift from nominal with compensation	≤ 2% opacity/40 deg F	N/A

1.3 *Insensitivity to Ambient Light*

Parameter	Specification	Actual Test Result
Max solar intensity	900 W/m^2	1035 W/m^2
Nominal measurement value	10 - 20% opacity	14.59 %
Measurement drift, max deviation from nominal measurement value	≤ 2% opacity	0.03 %
Drift was corrected for thermal effects, YES or NO	Manufacturer specified	NO
Zero drift from nominal without compensation	≤ 2% opacity	0.20 %
Zero drift from nominal with compensation	≤ 2% opacity	N/A
Upscale drift from nominal without compensation	≤ 2% opacity	0.03 %
Upscale drift from nominal with compensation	≤ 2% opacity	N/A

1.4 *External Calibration Device Availability*

Parameter	Specification	Availability/Value
External Zero device	Optional	Standard equipment - *Calibration Kit*
External Zero device repeatability	≤ 1% opacity	0.17 %
External filter access	To be available	Standard equipment - *Calibration Kit*

1.5 *Zero/Upscale Calibration Check Apparatus*

Parameter	Specification	Actual Test Result
Indicated response to simulated zero calibration device	0 ± 0.5% opacity	0.00 % opacity
Simulated Zero Check	Simulated condition during which the energy reaching the detector is between 90 and 190% of the energy reaching the detector under actual clear path conditions*	100 % of clear path
Response to upscale calibration device without electronic hardware or software modification (with PLCF)	±10% opacity to highest calibration error attenuator value	35.72 % opacity
Response to upscale calibration device without electronic hardware or software modification (w/o PLCF)	None	35.72 % opacity
Do automatic zero and upscale calibration devices check all active optics and electronics?	Required	YES
Is automatic correction provided for Zero drift?	Mfgr to specify (Y/N)	YES
	If YES, specify frequency	Provided at each complete calibration
Is automatic correction provided for dust accumulation on exposed optics?	Mfgr to specify (Y/N)	YES
	If YES, specify frequency	Provided at each complete calibration
Is automatic correction provided for upscale/cal drift?	Mfgr to specify (Y/N)	NO
	If YES specify frequency	N/A
95% confidence coefficient of upscale calibration device repeatability test (each unit)	≤ 1.5 % opacity	0.03 % opacity

Note:* This specification was verified by calculating the relationship between the detector clear path energy and the detected energy from the simulated zero device.

1.6 *PLCF Security Precautions*

Condition	Specification	As Supplied (Y/N)
Original certified value is fixed and not adjustable by user without assistance from the manufacturer	One or more of the listed conditions to be provided	YES
Value is output with Zero and Upscale values during each calibration cycle	One or more of the listed conditions to be provided	optional
Flag (alarm) is activated when changed from original certified or permanently recorded value	One or more of the listed conditions to be provided	NO

1.7 *Faults and Alarms*

Fault Conditions (Note 1)	Specified Indication	Actual Indication
Purge failure transceiver side	Visual & electrical	FAULT LED lights & relay closes
Purge failure reflector side	Visual & electrical	FAULT LED lights & relay closes
Out of service or audit	Visual & electrical	FAULT LED lights & relay closes
ADC (Sync demod) failure	Visual & electrical	FAULT LED lights & relay closes
REFERENCE fault	Visual & electrical	FAULT LED lights & relay closes
NORMAL position not achieved	Visual & electrical	FAULT LED lights & relay closes
ZERO position not achieved	Visual & electrical	FAULT LED lights & relay closes
UPSCALE position not achieved	Visual & electrical	FAULT LED lights & relay closes
Clear stack SET in progress	Visual & electrical	FAULT LED lights & relay closes
ZERO SET in progress	Visual & electrical	FAULT LED lights & relay closes
BACKGROUND SET in progress	Visual & electrical	FAULT LED lights & relay closes
Clear stack SET voltage out of range	Visual & electrical	FAULT LED lights & relay closes
ZERO SET voltage out of range	Visual & electrical	FAULT LED lights & relay closes
ZERO calibration bad	Visual & electrical	FAULT LED lights & relay closes
UPSCALE calibration bad	Visual & electrical	FAULT LED lights & relay closes
Excessive DUST compensation	Visual & electrical	FAULT LED lights & relay closes

1.7 *Faults and Alarms* - *continued*

Alarm Conditions (Note 2)	Specified Indication	Actual Indication
None, per ASTM malfunction definitions. **ALARMS** are emissions exceedance values	Not Applicable	Not Applicable

Note 1) Fault conditions are those conditions which, when they occur, are deemed by the manufacturer to result in performance which is not in compliance with this performance specification.

Note 2) Alarm conditions are those conditions for which the manufacturer recommends review and/or corrective action by trained service personnel as appropriate to prevent further deterioration of instrument performance which could result in performance not in compliance with this specification.

Note 3) Manufacturer may use other nomenclature to designate either general or specific alarms and/or faults, as long as they are appropriately defined in the operations manual.

1.8 *Miscellaneous*

Parameter	Specification	Test Result
Resolution of visual measurement indication, if provided	≤ 0.5% opacity	0.01 % opacity
Resolution of analog measurement indication	≤ 0.5% opacity	0.002 % opacity
Resolution of serial digital output, if provided	≤ 0.5% opacity	0.01 % opacity
Bipolar range of visual measurement indication	+50% opacity or more to -4% opacity or less	100% to -25%
Capability of analog output measurement indication to indicate negative values to at least -4% opacity	Required	YES
Are means available to monitor daily zero and upscale drift before correction?	Optional	YES
Is upscale drift corrected for zero drift in above method?	Optional	YES
Are means available to monitor dust accumulation on exposed optical surfaces?	Optional	YES
What surfaces are monitored for dust accumulation?	Mfgr. to specify, if applicable	1.) Transceiver exit window 2.) Zero mechanism window 3.) Zero mechanism reflector
Is an alarm provided for excessive dust accumulation?	Mfgr. to specify if automatic correction is provided	Yes. Visual, FAULT LED lights. Electrical, FAULT relay activated
What level of dust accumulation triggers the above alarm?	Mfgr. to specify, if applicable	4.0 %
Is dust level measured separately from accumulated zero drift?	Mfgr. to specify	NO

1.8 ***Miscellaneous*** *- continued*

Parameter	Specification	Test Result
Are all dust (if provided), zero and upscale values corrected for stack exit conditions?	Required	YES
What is the normal update interval for opacity measurements?	10 sec max	<1.0 second
Do longer term opacity averages include at least 6 approximately equally distributed individual measurement values per minute?	Required	YES

2. Design Specifications Verified Through Tests Prescribed for an Opacity Monitor Selected on a Monthly Basis, or from Each Production Lot

The opacity monitor that was selected and tested to demonstrate the following design parameters was selected on the basis of a monthly selection __X__, a manufacturing lot not to exceed 20 in size ___, or following a major change in the design or construction of the monitor ___.

OPACITY MONITOR INFORMATION

Model	*LightHawk 560*
Transceiver type	STD
Transceiver serial no.	5600902
Reflector type	7mm
Reflector serial no.	5600902t
Control unit serial no.	5600902
System software version	1.09

Component software versions:

	68332	NEURON
Transceiver	1.11	1.50
Remote	1.13	1.51
Multi I/O		1.50

TESTS PERFORMED BY:

Ryan Johnston DATE: 9/13/2005

TEST DATA REVIEWED AND CERTIFIED BY:

Joseph F. Lebarty DATE: 9/14/2005

Joseph F. Lebarty

2.1 *Angle of View*

Portion of the opacity monitor included in the test:
Standard Transceiver receive optics with dc coupled electronics.

Portion of the opacity monitor excluded from the test:
No purge air shutters. This will test maximum AOV angle.

Light source used in the test: directional ___ non-directional X

Were detector/measurement electronics modified to measure response to designated light source?
(Y/N) YES Modifications described in attachment B

Parameter	Specification	Actual Test Result
Angle of View, horizontal	≤4 degrees for all radiation providing a response of ≥ 2.5% of peak response	1.87 degrees
Angle of View, vertical	≤4 degrees for all radiation providing a response of ≥ 2.5% of peak response	2.29 degrees

2.2 *Angle of Projection*

Option 1 Procedure

Portion of the opacity monitor included in the test:

Standard Transceiver projection. Remote detector same configuration as transceiver. Accepts modulated signal.

Portion of the opacity monitor excluded from the test:

No purge air shutters. This will test maximum AOP angle. Remote detector signal substituted for transceiver detector into standard circuitry.

Photodetector used in the test:

Same size, model and spectral characteristics as transceiver detector.

If tests were conducted with dc coupled measurement circuit, was ambient light level less than 0.5% of peak light intensity? (Y/N) N/A

If tests were conducted with ac coupled measurement circuit, was it demonstrated that ambient light did not saturate the detector? (Y/N) N/A
and was it demonstrated that turning on/off the lights did not affect measurements?
(Y/N) N/A

Parameter	Specification	Actual Test Result
Angle of projection, horizontal	≤4 degrees for all radiation providing a response of ≥ 2.5% of peak response	N/A degrees
Angle of projection, vertical	≤4 degrees for all radiation providing a response of ≥ 2.5% of peak response	N/A degrees

Option 2 Procedure (For transmissometer designs that have previously met the AOP specification using Option 1 procedure during the previous 12 months)

Distance from transceiver/transmitter to target	3.0	meters
Beam dimension (diameter) in the vertical direction	7.38	cm
Beam dimension (diameter) in the horizontal direction	7.38	cm
Option 2 result (total subtended angle):	1.41	degrees
Option 1 result (angle of projection):	1.53	degrees
Difference (Option 1 results minus Option 2 results:	0.12	degrees

If results do not agee within 0.3 degrees, repeat the testing using Option1.

2.3 *Insensitivity to Supply Voltage Variations*

Manufacturer's specified nominal voltages: 1.) 100 vac
2.) 115 vac
3.) 230 vac

Manufacturer's specified operating voltage ranges: 85 to 132 vac
195 to 265 vac

	Parameter	Specification	Actual Test Value
100/115 vac nominal	Min test voltage (100/115vac range)	-10% from nom, or mfgrs min specified operating voltage, whichever is lesser	132 vac
	Max test voltage (100/115vac range)	+10% from nom, or mfgrs max specified operating voltage, whichever is greater	132 vac
	Nominal measurement value	10 - 20% opacity	15.08 % opacity
	Measurement drift, max deviation from nominal measurement value from nominal to max ac voltage	± 1% opacity	0.02 % opacity
	Measurement drift, max deviation from nominal measurement value from nominal to min ac voltage	± 1% opacity	0.03 % opacity
	Zero drift from nominal to min ac voltage *without* compensation	± 1% opacity	0.19 % opacity
	Zero drift from nominal to min ac voltage *with* compensation	± 1% opacity	N/A
	Upscale drift from nominal to min ac voltage *without* compensation	± 1% opacity	0.06 % opacity
	Upscale drift from nominal to min ac voltage *with* compensation	± 1% opacity	N/A
	Zero drift from nominal to max ac voltage *without* compensation	± 1% opacity	0.29 % opacity
	Zero drift from nominal to max ac voltage *with* compensation	± 1% opacity	N/A
	Upscale drift from nominal to max ac voltage *without* compensation	± 1% opacity	0.05 % opacity
	Upscale drift from nominal to max ac voltage *with* compensation	± 1% opacity	N/A

2.3 continued

	Parameter	Specification	Actual Test Value
230 vac nominal	Min test voltage (230vac range)	-10% from nom, or mfgrs min specified operating voltage, whichever is lesser	195 vac
	Max test voltage (230vac range)	+10% from nom, or mfgrs max specified operating voltage, whichever is greater	265 vac
	Measurement drift, max deviation from nominal measurement value from nominal to max ac voltage	± 1% opacity	0.06 % opacity
	Measurement drift, max deviation from nominal measurement value from nominal to min ac voltage	± 1% opacity	0.03 % opacity
	Zero drift from nominal to min ac voltage *without* compensation	± 1% opacity	0.09 % opacity
	Zero drift from nominal to min ac voltage *with* compensation	± 1% opacity	N/A
	Upscale drift from nominal to min ac voltage *without* compensation	± 1% opacity	0.06 % opacity
	Upscale drift from nominal to min ac voltage *with* compensation	± 1% opacity	N/A
	Zero drift from nominal to max ac voltage *without* compensation	± 1% opacity	0.02 % opacity
	Zero drift from nominal to max ac voltage *with* compensation	± 1% opacity	N/A
	Upscale drift from nominal to max ac voltage *without* compensation	± 1% opacity	0.07 % opacity
	Upscale drift from nominal to max ac voltage *with* compensation	± 1% opacity	N/A

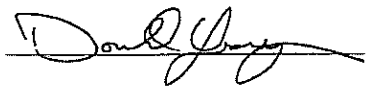
3. Performance Specifications Verified by Tests Prescribed for Each Specific Opacity Monitor

The following tests were performed individually on the specific instrument described in the beginning of this test report. Further, the following signatures attest to the fact that the design and performance specifications tested on previous opacity monitors, as described in Sections 1 and 2, are representative of the design and performance of this specific monitor.

TESTS PERFORMED BY:

Jeremy Brown DATE: 9/22/2005

TEST DATA REVIEWED AND CERTIFIED BY:



DATE: 9/26/2005

Donald Young

3.1 *Calibration Error*

Filter	Specify Group, Group I or II	Actual filter value (uncorrected)	Actual filter value (corrected)	Specified Cal Error	Actual Cal Error
Low	Group II	15.32%	15.32%	3%	0.56 %
Mid	Group II	25.84%	25.84%	3%	0.26 %
High	Group II	49.83%	49.83%	3%	0.17 %

Note: Group I filters are 5-10, 10-20, 20-40 percent opacity (low, mid, high)
Group II filters are 10-20, 20-30, 30-60 percent opacity (low, mid, high)

3.2 *Response Time*

Test Number	Upscale Response (sec)	Downscale Response (sec)
1	5.03	4.92
2	5.07	5.06
3	5.11	5.13
4	5.06	4.99
5	4.99	5.03
Mean	5.06	5.02

3.3 *Misalignment Indication*

This opacity monitor uses: (a) manual alignment and visual alignment sighting device (Y/N) **YES**,
or (b) automatic beam steering (Y/N) **NO**

3.3.1 For manually aligned opacity monitors with visual alignment sighting indicator:

A. Rotational misalignment

Parameter	Specification	Test Result
Nominal measurement value	0-10% opacity	8.44 % opacity
Indication of centered alignment	Acceptable? (Y/N)	YES
Clear indication of misalignment for rotational misalignment for transceiver/transmitter in *upward* vertical direction which causes 2% opacity change	Acceptable? (Y/N)	YES
Clear indication of misalignment for rotational misalignment for transceiver/transmitter in *downward* vertical direction which causes 2% opacity change	Acceptable? (Y/N)	YES
Clear indication of misalignment for rotational misalignment for transceiver/transmitter in horizontal *right* direction which causes 2% opacity change	Acceptable? (Y/N)	YES
Clear indication of misalignment for rotational misalignment for transceiver/transmitter in horizontal *left* direction which causes 2% opacity change	Acceptable? (Y/N)	YES

B. Lateral misalignment, same test conditions

Parameter	Specification	Test Result
Clear indication of misalignment for lateral movement to the *left* which causes 2% opacity change	Acceptable? (Y/N)	YES
Clear indication of misalignment for lateral movement to the *right* which causes 2% opacity change	Acceptable? (Y/N)	YES
Clear indication of misalignment for lateral movement to the *upward* direction which causes 2% opacity change	Acceptable? (Y/N)	YES
Clear indication of misalignment for lateral movement to the *downward* direction which causes 2% opacity change	Acceptable? (Y/N)	YES

3.4 *Spectral Response Repeatability*

Date of spectral response transmission filter calibration 1/28/2005

Monotonically decreasing transmission filter between 500 and 600nm calibration:

Wavelength (nm)	Specification (Transmittance)	Actual (Transmittance)
500	>80%	83.5
510		83.0
520		81.5
530		78.4
540		73.2
550	50% transmission point (550-575 nm)	65.9
560	50% transmission point (550-575 nm)	55.9
570	50% transmission point (550-575 nm)	44.4
580		32.5
590		21.6
600	<20%	12.7
625	<5% above 625 nm	2.0

Calculated nominal response of analyzer to transmission filter: 27.2% opacity

Calculated allowable variation of the response to the photopic filter:

OP, high 42.8% OP, low 18.3%

PLCF 1.000

PLCF corrected response of the instrument to listed photopic filter 24.5% opacity

Actual measured response of the instrument to listed photopic filter 24.5% opacity

Is measured response within previously calculated range? (Yes/No) YES

3.5 *Upscale Calibration Device Repeatability*

Mean value of 5 measurements 35.72

95% Confidence coefficient: 0.03 % opacity Specification is <1.5% opacity

3.6 *Intrinsic Opacity Monitor Settings/Adjustments*

List all configurable parameters to obtain the performance described in this report. These parameters typically include calibration check intervals, calibration check correction procedure settings relating to flange-to-flange separation distance, range, averaging time, alarms etc.

Parameter	Component	Classification
Reference control loop	Transceiver	non-elective
Dust compensation	Transceiver	non-elective
Cal mechanism iris & materials	Transceiver	factory procedure
Calibration kit iris & materials	Transceiver	factory procedure
Reference gain	Transceiver	factory procedure
Signal gain	Transceiver	factory procedure
Background SET	Transceiver	factory procedure
Normal SET	Transceiver	factory procedure
Cal Zero SET	Transceiver	factory procedure
Analog output adjustments: R20, R21, R30, R31, R40, R41, R50 & R51	Transceiver	factory procedure
Reflector materials	Reflector	factory procedure

4. Quality Assurance Program

4.1 ISO, ANSI/ASQC, or other Quality System Certification

Is the company which prepared this report certified according to ISO quality standards, ANSI/ASQC (QC 90 or 91) or other applicable quality standard (Y/N) **YES**. If so, to what classification **ISO 9001:2000** and on what date **02/25/03**. Attach certificate of such designation as attachment C.

4.2 QA Guideline Compliance

Has the company which prepared this document established and maintained a QA/QC program that is in compliance with the guidelines specified in the ASTM SPD6216-03, (Y/N) N/A. If so, please attach a description of the quality program in attachment C, and indicate the person responsible for the integrity of this quality program

Spectral Response

ASTM Standard Practice D 6216-03

Section(s): 6.2 ***LightHawk 560*** Test Person: E. Smierciak

Test Frequency:

Annual X

Design Change:

Fall spectral performance:

Test Date: 5/23/2005

Peak Spectral Response: 533 nm

Mean Spectral Response: 533 nm

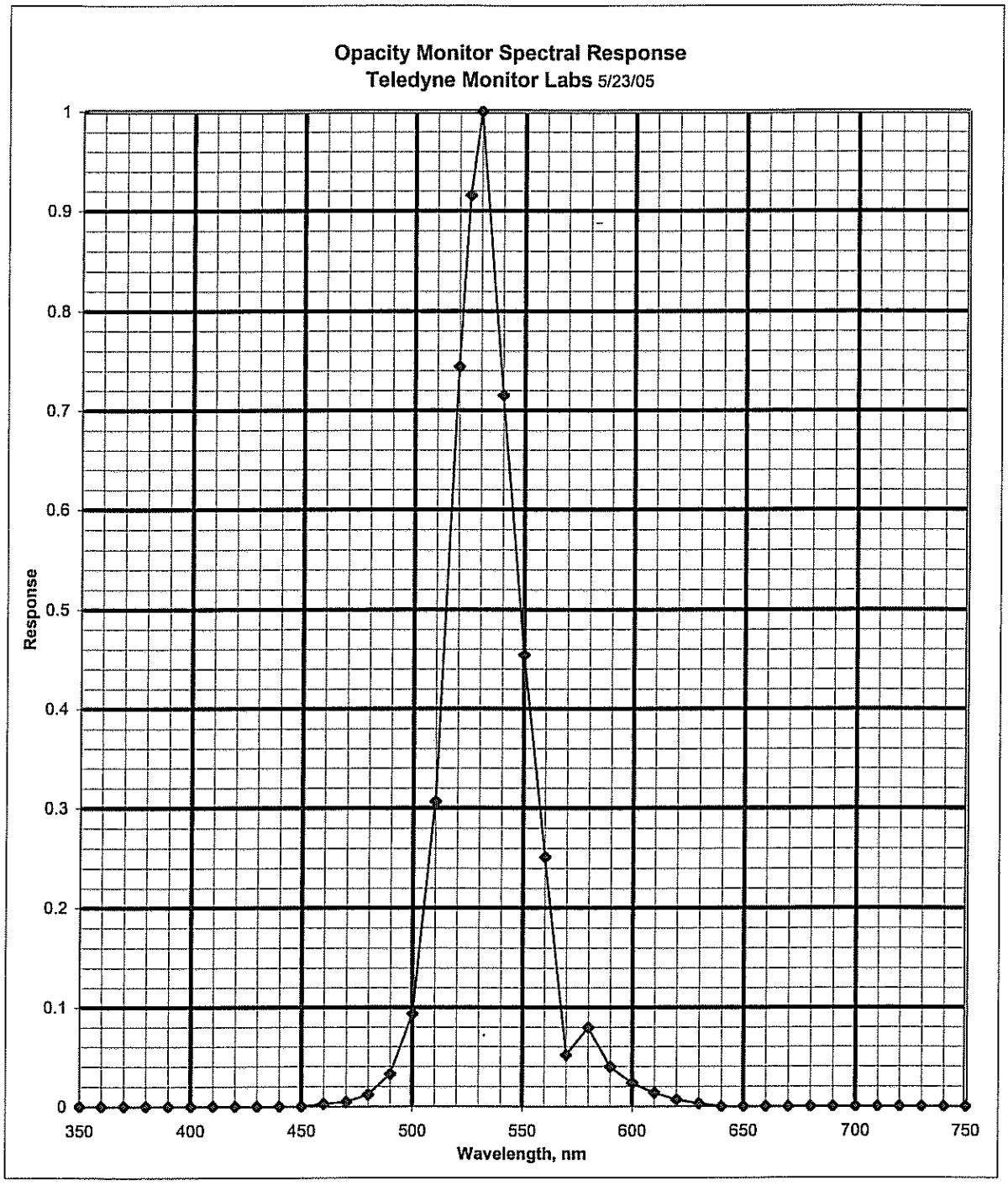
Max response beyond 700nm: 0.0 %

Max response below 400nm: 0.0 %

Data assembled from manufacturer's curves using TML #526898 LED and PIN diode detector #526880/526895

Wavelength (nm)	LED Response (normalized)	Detector Response (normalized)	LED/ Detector (product)	Analyzer Response (normalized)
350	0.000	0.079	0.0000	0.000
360	0.000	0.083	0.0000	0.000
370	0.000	0.084	0.0000	0.000
380	0.000	0.091	0.0000	0.000
390	0.000	0.098	0.0000	0.000
400	0.000	0.109	0.0000	0.000
410	0.000	0.126	0.0000	0.000
420	0.000	0.150	0.0000	0.000
430	0.000	0.170	0.0000	0.000
440	0.000	0.190	0.0000	0.000
450	0.000	0.217	0.0000	0.000
460	0.005	0.245	0.0012	0.003
470	0.007	0.274	0.0019	0.005
480	0.017	0.299	0.0051	0.012
490	0.042	0.322	0.0136	0.032
500	0.116	0.341	0.0395	0.093
510	0.351	0.368	0.1295	0.306
520	0.811	0.388	0.3146	0.744
525	0.968	0.400	0.3872	0.916
530	1.028	0.411	0.4229	1.000
540	0.697	0.434	0.3024	0.715
550	0.423	0.454	0.1920	0.454
560	0.220	0.482	0.1061	0.251
570	0.043	0.509	0.0218	0.052
580	0.063	0.534	0.0336	0.079
590	0.030	0.552	0.0167	0.039
600	0.017	0.571	0.0098	0.023
610	0.010	0.590	0.0059	0.014
620	0.005	0.607	0.0028	0.007
630	0.002	0.631	0.0012	0.003
640	0.000	0.652	0.0000	0.000
650	0.000	0.679	0.0000	0.000
660	0.000	0.701	0.0000	0.000
670	0.000	0.718	0.0000	0.000
680	0.000	0.735	0.0000	0.000
690	0.000	0.756	0.0000	0.000
700	0.000	0.769	0.0000	0.000
710	0.000	0.787	0.0000	0.000
720	0.000	0.800	0.0000	0.000
730	0.000	0.821	0.0000	0.000
740	0.000	0.838	0.0000	0.000
750	0.000	0.855	0.0000	0.000

LightHawk 560



The following circuit modifications are required on the transceiver Optical Amplifier board to accurately measure the AOV light source:

1. Disconnect the transceiver LED light source at connector J2.
2. AC coupling capacitors C9 and C87 are by-passed to allow passage of the dc signal.
3. Place JU8 and JU9 in the test position.
4. Take analog output from TP1.

Certificate of Approval

Awarded to

TELEDYNE MONITOR LABS, INC.
76 INVERNESS DRIVE EAST, ENGLEWOOD, CO USA
5310 N. PIONEER ROAD, GIBSONIA, PA USA

Bureau Veritas Quality International (NA) Inc. certifies that the Quality Management System of the above organization has been assessed and found to be in accordance with the requirements of the standards and scope of supply detailed below.

QUALITY STANDARDS

ISO 9001:2000
ANSI/ISO/ASQ Q9001-2000

SCOPE OF SUPPLY

DESIGN, MANUFACTURE, SERVICE, AND DISTRIBUTE AIR MONITORING INSTRUMENTS, CONTINUOUS EMISSION MONITORING SYSTEMS, DATA ACQUISITION AND HANDLING SYSTEMS AND ASSOCIATED SOFTWARE.

Original Approval Date: *6 DECEMBER 1996*
Original Approval Date for ISO 9001:2000: *23 FEBRUARY 2003*

Subject to the continued satisfactory operation of the organization's Quality Management System, this certificate will remain valid until:

23 FEBRUARY 2006

Issue Date: *25 FEBRUARY 2003*

Certificate No: *124427*

For Bureau Veritas Quality International (N.A.) Inc.
515 West 5th Street, Jamestown, New York, U.S.A.

SF06/NA

Response Time Data

ATTACHMENT D

Customer Solvay
Test Per. JeremyBrown
Affiliation Monitor Labs
Date 9/22/2005

Analyzer Manufacturer TELEDYNE *MONITOR LABS*
Model Number *LightHawk 560*
Serial Number 5600912
Location of Test GIBSONIA, PA FACILITY
Display Device 1938

		opacity		optical density
High Range Attenuator Value:	(Actual)	49.83	%	0.2996
	(PLCF Adjusted)	49.83	%	0.2996
Upscale Response Value (0.95 x attenuator value)		47.34	%	
Downscale Response Value (0.05 x attenuator value)		2.49	%	

UPSCALE

1	5.0	seconds
2	5.1	seconds
3	5.1	seconds
4	5.1	seconds
5	5.0	seconds
UPSCALE AVERAGE	**5.06**	seconds

DOWNSCALE

1	4.9	seconds
2	5.1	seconds
3	5.1	seconds
4	5.0	seconds
5	5.0	seconds
DOWNSCALE AVG	**5.02**	seconds

Calibration Error Test Data

Customer Solvay
Test Per. Jeremy Brown
Affiliation Monitor Labs
Date 9/22/2005

Analyzer Manufacturer TELEDYNE *MONITOR LABS*
Model Number *LightHawk 560*
Serial Number 5600912
Location of Test Gibsonia, PA Facility
Display Device 1938

Installation Dimensions

Installation Pathlength (F-F)	3.962	meters	13.00	feet
Monitor Pathlength	3.658	meters	12.00	feet
Outlet Pathlength	3.658	meters	12.00	feet

Pathlength Correction Factor (PLCF) 1.000
Opacity Full Scale 100 % opacity

Attenuator Information

	Serial Number	Calibration Date	Certified Value Opacity %	Certified Value Op. Den.	Corrected Value Opacity %	Corrected Value Op. Den.
Low	S3262	9/2/2005	15.32	0.0722	15.32	0.0722
Mid	S3140	7/20/2005	25.84	0.1298	25.84	0.1298
Hi	S3206	8/5/2005	49.83	0.2996	49.83	0.2996

RUN NO.	Attenuator Value (Path Adjusted % opacity)	Instrument Reading (% opacity)	DIFFERENCE VALUES (% opacity) Low	Mid	High
Low 1	15.32	15.70	0.38		
Mid 1	25.84	26.10		0.26	
High 1	49.83	50.00			0.17
Low 2	15.32	15.80	0.48		
Mid 2	25.84	26.10		0.26	
High 2	49.83	50.00			0.17
Low 3	15.32	15.70	0.38		
Mid 3	25.84	26.10		0.26	
High 3	49.83	50.00			0.17
Low 4	15.32	15.80	0.48		
Mid 4	25.84	26.10		0.26	
High 4	49.83	50.00			0.17
Low 5	15.32	15.90	0.58		
Mid 5	25.84	26.10		0.26	
High 5	49.83	50.00			0.17
		Arithmetic Mean	0.46	0.26	0.17
		Confidence Coefficient	0.10	0.00	0.00
		Calibration Error	**0.56**	**0.26**	**0.17**

CERTIFIED NEUTRAL DENSITY ATTENUATOR ANALYSIS REPORT

I. PURPOSE

Analysis was conducted to determine the certified opacity of neutral density attenuators used to conduct Calibration Error and Opacity Audit testing of Continuous Opacity Monitoring Systems (COMS).

II. DETERMINATION OF CERTIFIED OPACITY VALUES

All attenuator calibration procedures were in accordance with 40CFR60, Appendix B, Performance Specification 1, Sections 6.2 through 7.2, dated 8/10/2000. These attenuators have been calibrated as secondary standards on a laboratory transmissometer maintained specifically for this purpose. A linear regression curve was constructed using the transmissometer's response to primary attenuators. NIST traceability is established through assignment of human eye response transmittance values to the primary attenuators using spectral data from a spectrophotometer verified with NIST Standard Reference materials. The spectrophotometer meets or exceeds the specifications of 40CFR60, Appendix B, Performance Specification 1, Section 6.3.

The certified opacity values marked on each attenuator are determined from the corrected calibration curve.

III. ACCURACY

Attenuator accuracy is appropriate for the performance of Calibration Error testing on individual COMS at both the manufacturer's facility and the user's site.

IV. STABILITY

In accordance with 40CFR60, Appendix B, Performance Specification 1, Section 7.2, (iii), these attenuators must be recalibrated semiannually (every 6 months).

CERTIFICATE OF ANALYSIS - NEUTRAL DENSITY ATTENUATORS

The attenuators listed below were used to conduct the Calibration Error test and have been calibrated in accordance with Title 40CFR60, Appendix B, Performance Specification 1, Section 7.2, dated 8/10/2000.

These Attenuators are certified by TELEDYNE *Monitor Labs* to have the following opacity values:

Serial Number	Opacity in %	Calibration Date	Recalibration Date
S3262	15.32%	9/2/2005	3/2/2006
S3140	25.84%	7/20/2005	1/20/2006
S3206	49.83%	8/5/2005	2/5/2006

Tester	Date
AARON J DOMITROVIC	9/22/2005

Customer:

Solvay
ST-1
5600912

SOLVAY SODA ASH JOINT VENTURE
OPACITY CALIBRATION ERROR CHECK

Test Information

Test Date:	**6/16/2006**
Facility:	Solvay Soda Ash
Unit:	CA1_CA2 Common
Test Reason:	Initial Certification
Aborted:	No

Analyzer Information

Range:	High
Instrument Span:	100
Manufacturer:	Teledyne Instruments
Model:	LightHawk 560
Serial Number:	5600912

Low Gas Attenuator Serial Number: S3262

Run No.	TIME	Reference Gas	CEMS Response	d_i	d_i^2
1	12:13 PM	15.32	15.30	0.02	0.00
2	12:17 PM	15.32	15.40	-0.08	0.01
3	12:27 PM	15.32	15.30	0.02	0.00
4	12:34 PM	15.32	15.10	0.22	0.05
5	12:40 PM	15.32	15.50	-0.18	0.03

n	5.00
avg /d/	0.00
avg /RM/	15.32
avg /CEM/	15.32
SUM(d_i)	0.00
SUM(d_i^2)	0.09
SUM(d_i)^2	0.00
S_d	0.15
CC	0.16
Cal Error	0.16
LIMIT	3.00%

Mid Gas Attenuator Serial Number: S3140

Run No.	TIME	Reference Gas	CEMS Response	d_i	d_i^2
1	12:15 PM	25.84	26.00	-0.16	0.03
2	12:22 PM	25.84	25.90	-0.06	0.00
3	12:29 PM	25.84	26.30	-0.46	0.21
4	12:36 PM	25.84	25.90	-0.06	0.00
5	12:42 PM	25.84	26.60	-0.76	0.58

n	5.00
avg /d/	0.30
avg /RM/	25.84
avg /CEM/	26.14
SUM(d_i)	1.50
SUM(d_i^2)	0.82
SUM(d_i)^2	2.25
S_d	0.30
CC	0.34
Cal Error	0.64
LIMIT	3.00%

High Gas Attenuator Serial Number: S3206

Run No.	TIME	Reference Gas	CEMS Response	d_i	d_i^2
1	12:17 PM	49.83	50.30	-0.47	0.22
2	12:24 PM	49.83	50.20	-0.37	0.14
3	12:31 PM	49.83	50.40	-0.57	0.32
4	12:38 PM	49.83	50.40	-0.57	0.32
5	12:43 PM	49.83	50.00	-0.17	0.03

n	5.00
avg /d/	0.43
avg /RM/	49.83
avg /CEM/	50.26
SUM(d_i)	2.15
SUM(d_i^2)	1.04
SUM(d_i)^2	4.62
S_d	0.17
CC	0.19
Cal Error	0.62
LIMIT	3.00%

CALCULATIONS: **Er = |D + CC|**

WHERE: Er = Error
D = Arithmetic mean of the RM - CEM
CC = Coffidence Coefficient

Audit Data

SOLVAY SODA ASH JOINT VENTURE

Data for 6/16/2006 11:42:40 AM thru 6/16/2006 12:49:50 PM from '2006-06-16 11.42.cea'

Timestamp	(CA-1 & 2) Opacity %
11:42:40 AM	3.9
11:42:50 AM	3.8
11:43:00 AM	3.8
11:43:10 AM	3.8
11:43:20 AM	3.8
11:43:30 AM	3.8
11:43:40 AM	3.8
11:43:50 AM	3.9
11:44:00 AM	3.8
11:44:10 AM	3.8
11:44:20 AM	3.9
11:44:30 AM	3.9
11:44:40 AM	3.9
11:44:50 AM	3.9
11:45:00 AM	3.9
11:45:10 AM	3.9
11:45:20 AM	3.9
11:45:30 AM	3.9
11:45:40 AM	3.9
11:45:50 AM	3.8
11:46:00 AM	3.8
11:46:10 AM	3.8
11:46:20 AM	3.8
11:46:30 AM	3.8
11:46:40 AM	3.8
11:46:50 AM	3.9
11:47:00 AM	3.9
11:47:10 AM	3.9
11:47:20 AM	3.9
11:47:30 AM	3.9
11:47:40 AM	3.9
11:47:50 AM	3.9
11:48:00 AM	3.9
11:48:10 AM	3.9
11:48:20 AM	3.9
11:48:30 AM	3.9
11:48:40 AM	3.9
11:48:50 AM	3.8
11:49:00 AM	3.8
11:49:10 AM	3.8
11:49:20 AM	3.8
11:49:30 AM	3.8
11:49:40 AM	3.8
11:49:50 AM	3.9
11:50:00 AM	3.9
11:50:10 AM	3.9
11:50:20 AM	3.9

Timestamp	(CA-1 & 2) Opacity %
11:50:30 AM	3.9
11:50:40 AM	3.9
11:50:50 AM	3.8
11:51:00 AM	3.8
11:51:10 AM	3.8
11:51:20 AM	3.8
11:51:30 AM	3.8
11:51:40 AM	3.8
11:51:50 AM	23.9
11:52:00 AM	23.9
11:52:10 AM	23.9
11:52:20 AM	23.9
11:52:30 AM	23.9
11:52:40 AM	23.9
11:52:50 AM	53.3
11:53:00 AM	53.3
11:53:10 AM	53.3
11:53:20 AM	53.3
11:53:30 AM	53.3
11:53:40 AM	53.3
11:53:50 AM	-3.8
11:54:00 AM	-3.8
11:54:10 AM	-3.8
11:54:20 AM	-3.8
11:54:30 AM	-3.8
11:54:40 AM	-3.8
11:54:50 AM	90.1
11:55:00 AM	90.1
11:55:10 AM	90.1
11:55:20 AM	90.1
11:55:30 AM	90.1
11:55:40 AM	90.1
11:55:50 AM	26.5
11:56:00 AM	26.5
11:56:10 AM	26.5
11:56:20 AM	26.5
11:56:30 AM	26.4
11:56:40 AM	26.4
11:56:50 AM	2.0
11:57:00 AM	2.0
11:57:10 AM	2.0
11:57:20 AM	2.0
11:57:30 AM	2.0
11:57:40 AM	2.0
11:57:50 AM	0.8
11:58:00 AM	0.8
11:58:10 AM	0.8
11:58:20 AM	0.8
11:58:30 AM	0.8
11:58:40 AM	0.8
11:58:50 AM	0.7

Timestamp	(CA-1 & 2) Opacity %
11:59:00 AM	0.7
11:59:10 AM	0.7
11:59:20 AM	0.7
11:59:30 AM	0.7
11:59:40 AM	0.7
11:59:50 AM	0.6
12:00:00 PM	0.6
12:00:10 PM	0.6
12:00:20 PM	0.6
12:00:30 PM	0.6
12:00:40 PM	0.6
12:00:50 PM	10.1
12:01:00 PM	10.1
12:01:10 PM	10.1
12:01:20 PM	10.1
12:01:30 PM	10.1
12:01:40 PM	10.1
12:01:50 PM	16.3
12:02:00 PM	16.3
12:02:10 PM	16.3
12:02:20 PM	16.3
12:02:30 PM	16.3
12:02:40 PM	16.3
12:02:50 PM	9.6
12:03:00 PM	9.6
12:03:10 PM	9.6
12:03:20 PM	9.6
12:03:30 PM	9.6
12:03:40 PM	9.6
12:03:50 PM	16.2
12:04:00 PM	16.2
12:04:10 PM	16.2
12:04:20 PM	16.2
12:04:30 PM	16.2
12:04:40 PM	16.2
12:04:50 PM	8.6
12:05:00 PM	8.6
12:05:10 PM	8.6
12:05:20 PM	8.6
12:05:30 PM	8.6
12:05:40 PM	8.6
12:05:50 PM	0.4
12:06:00 PM	0.4
12:06:10 PM	0.4
12:06:20 PM	0.4
12:06:30 PM	0.4
12:06:40 PM	0.4
12:06:50 PM	-3.2
12:07:00 PM	-3.2
12:07:10 PM	-3.2
12:07:20 PM	-3.2

Timestamp	(CA-1 & 2) Opacity %
12:07:30 PM	-3.2
12:07:40 PM	-3.2
12:07:50 PM	-4.4
12:08:00 PM	-4.4
12:08:10 PM	-4.4
12:08:20 PM	-4.4
12:08:30 PM	-4.4
12:08:40 PM	-4.4
12:08:50 PM	-4.0
12:09:00 PM	-4.0
12:09:10 PM	-4.0
12:09:20 PM	-4.0
12:09:30 PM	-4.0
12:09:40 PM	-4.0
12:09:50 PM	-3.3
12:10:00 PM	-3.3
12:10:10 PM	-3.3
12:10:20 PM	-3.3
12:10:30 PM	-3.3
12:10:40 PM	-3.3
12:10:50 PM	-1.4
12:11:00 PM	-1.4
12:11:10 PM	-1.4
12:11:20 PM	-1.4
12:11:30 PM	-1.4
12:11:40 PM	-1.4
12:11:50 PM	9.1
12:12:00 PM	9.1
12:12:10 PM	9.1
12:12:20 PM	9.1
12:12:30 PM	9.1
12:12:40 PM	9.1
12:12:50 PM	15.3
12:13:00 PM	15.3
12:13:10 PM	15.3
12:13:20 PM	15.3
12:13:30 PM	15.3
12:13:40 PM	15.3
12:13:50 PM	26.7
12:14:00 PM	26.7
12:14:10 PM	26.7
12:14:20 PM	26.7
12:14:30 PM	26.7
12:14:40 PM	26.7
12:14:50 PM	26.0
12:15:00 PM	26.0
12:15:10 PM	26.0
12:15:20 PM	26.0
12:15:30 PM	26.0
12:15:40 PM	26.0
12:15:50 PM	41.1

Timestamp	(CA-1 & 2) Opacity %
12:16:00 PM	41.1
12:16:10 PM	41.1
12:16:20 PM	41.1
12:16:30 PM	41.1
12:16:40 PM	41.1
12:16:50 PM	50.3
12:17:00 PM	50.3
12:17:10 PM	50.3
12:17:20 PM	50.3
12:17:30 PM	50.3
12:17:40 PM	50.3 — H1
12:17:50 PM	28.4
12:18:00 PM	28.4
12:18:10 PM	28.4
12:18:20 PM	28.4
12:18:30 PM	28.4
12:18:40 PM	28.4
12:18:50 PM	14.0
12:19:00 PM	14.0
12:19:10 PM	14.0
12:19:20 PM	14.0
12:19:30 PM	14.0
12:19:40 PM	14.0
12:19:50 PM	15.4
12:20:00 PM	15.4
12:20:10 PM	15.4
12:20:20 PM	15.4
12:20:30 PM	15.4
12:20:40 PM	15.4 — L3
12:20:50 PM	17.6
12:21:00 PM	17.6
12:21:10 PM	17.6
12:21:20 PM	17.6
12:21:30 PM	17.6
12:21:40 PM	17.6
12:21:50 PM	25.9
12:22:00 PM	25.9
12:22:10 PM	25.9
12:22:20 PM	25.9
12:22:30 PM	25.9
12:22:40 PM	25.9 — M2
12:22:50 PM	45.8
12:23:00 PM	45.8
12:23:10 PM	45.8
12:23:20 PM	45.8
12:23:30 PM	45.8
12:23:40 PM	45.8
12:23:50 PM	50.2
12:24:00 PM	50.2
12:24:10 PM	50.2
12:24:20 PM	50.2

Timestamp	(CA-1 & 2) Opacity %
12:24:30 PM	50.2
12:24:40 PM	50.2
12:24:50 PM	21.4
12:25:00 PM	21.4
12:25:10 PM	21.4
12:25:20 PM	21.4
12:25:30 PM	21.4
12:25:40 PM	21.4
12:25:50 PM	14.9
12:26:00 PM	14.9
12:26:10 PM	14.9
12:26:20 PM	14.9
12:26:30 PM	14.9
12:26:40 PM	14.9
12:26:50 PM	15.3
12:27:00 PM	15.3
12:27:10 PM	15.3
12:27:20 PM	15.3
12:27:30 PM	15.3
12:27:40 PM	15.3
12:27:50 PM	22.7
12:28:00 PM	22.7
12:28:10 PM	22.7
12:28:20 PM	22.7
12:28:30 PM	22.7
12:28:40 PM	22.7
12:28:50 PM	26.3
12:29:00 PM	26.3
12:29:10 PM	26.3
12:29:20 PM	26.3
12:29:30 PM	26.3
12:29:40 PM	26.3
12:29:50 PM	40.8
12:30:00 PM	40.8
12:30:10 PM	40.8
12:30:20 PM	40.8
12:30:30 PM	40.8
12:30:40 PM	40.8
12:30:50 PM	50.4
12:31:00 PM	50.4
12:31:10 PM	50.4
12:31:20 PM	50.4
12:31:30 PM	50.4
12:31:40 PM	50.4
12:31:50 PM	35.7
12:32:00 PM	35.7
12:32:10 PM	35.7
12:32:20 PM	35.7
12:32:30 PM	35.7
12:32:40 PM	35.7
12:32:50 PM	14.6

Timestamp	(CA-1 & 2) Opacity %
12:33:00 PM	14.6
12:33:10 PM	14.6
12:33:20 PM	14.6
12:33:30 PM	14.6
12:33:40 PM	14.6
12:33:50 PM	15.1
12:34:00 PM	15.1
12:34:10 PM	15.1
12:34:20 PM	15.1
12:34:30 PM	15.1
12:34:40 PM	15.1 — L4
12:34:50 PM	20.9
12:35:00 PM	20.9
12:35:10 PM	20.9
12:35:20 PM	20.9
12:35:30 PM	20.9
12:35:40 PM	20.9
12:35:50 PM	25.9
12:36:00 PM	25.9
12:36:10 PM	25.9
12:36:20 PM	25.9
12:36:30 PM	25.9
12:36:40 PM	25.9 — M4
12:36:50 PM	50.7
12:37:00 PM	50.7
12:37:10 PM	50.7
12:37:20 PM	50.7
12:37:30 PM	50.7
12:37:40 PM	50.7
12:37:50 PM	50.4
12:38:00 PM	50.4
12:38:10 PM	50.4
12:38:20 PM	50.4
12:38:30 PM	50.4
12:38:40 PM	50.4 — H4
12:38:50 PM	19.5
12:39:00 PM	19.5
12:39:10 PM	19.5
12:39:20 PM	19.5
12:39:30 PM	19.5
12:39:40 PM	19.5
12:39:50 PM	15.5
12:40:00 PM	15.5
12:40:10 PM	15.5
12:40:20 PM	15.5
12:40:30 PM	15.5 — L5
12:40:40 PM	15.5
12:40:50 PM	22.8
12:41:00 PM	22.8
12:41:10 PM	22.8
12:41:20 PM	22.8

Timestamp	(CA-1 & 2) Opacity %
12:41:30 PM	22.8
12:41:40 PM	22.8
12:41:50 PM	26.6
12:42:00 PM	26.6
12:42:10 PM	26.6
12:42:20 PM	26.6
12:42:30 PM	26.6
12:42:40 PM	26.6 M5
12:42:50 PM	50.0
12:43:00 PM	50.0
12:43:10 PM	50.0
12:43:20 PM	50.0
12:43:30 PM	50.0
12:43:40 PM	50.0
12:43:50 PM	50.0 H5
12:44:00 PM	50.0
12:44:10 PM	50.0
12:44:20 PM	50.0
12:44:30 PM	50.0
12:44:40 PM	50.0
12:44:50 PM	84.9
12:45:00 PM	84.9
12:45:10 PM	84.9
12:45:20 PM	84.9
12:45:30 PM	84.9
12:45:40 PM	84.9
12:45:50 PM	67.9
12:46:00 PM	67.9
12:46:10 PM	67.9
12:46:20 PM	67.9
12:46:30 PM	67.9
12:46:40 PM	67.9
12:46:50 PM	44.0
12:47:00 PM	44.0
12:47:10 PM	44.0
12:47:20 PM	44.0
12:47:30 PM	44.0
12:47:40 PM	44.0
12:47:50 PM	3.8
12:48:00 PM	3.8
12:48:10 PM	3.8
12:48:20 PM	3.8
12:48:30 PM	3.8
12:48:40 PM	3.8
12:48:50 PM	3.8
12:49:00 PM	3.8
12:49:10 PM	3.8
12:49:20 PM	3.8
12:49:30 PM	3.8
12:49:40 PM	3.8
12:49:50 PM	3.8

Timestamp	(CA-1 & 2) Opacity %
Average	21.3
Minimum	-4.4
Maximum	90.1

CiSCO
7325 South Revere Parkway
Centennial, CO 80112
TEL: (303) 790-1000 ❖ FAX: (303) 790-7292

DAILY FIELD SERVICE REPORT

SITE LOCATION: Solvay

CUSTOMER: Solvay Chemicals CiSCO #:

ADDRESS: Green River Wy

TELEPHONE / CONTACT: Tim Brown CUSTOMER PO #:

REASON FOR CALL (Problem / Symptom): Cert CA-142

DATE:	START	STOP	DATE:	START	STOP
TRAVEL TIME			ON-SITE TIME		

SERVICE PERFORMED:

Verification of the alignment of the opacity meter was performed on site after installation in the stack.

SERVICE REPRESENTATIVE: DATE 6-16-06

CUSTOMER ACKNOWLEDGEMENT: DATE:

A:\Beverly\Misc Disk—5\DField-Rpt.doc\bh

System Response Check Test

Date	High Scale Filter Value	Monitor reading of High Scale Filter	95% of Monitor Reading	5% of Monitor Reading
9/8/06	49.83	49.43	46.96	2.47

Scale	Insertion/Removal		95% or 5% Response		Total Time Elapsed (Sec.)
	Value	Time (HH:MM:SS)	Value	Time (HH:MM:SS)	
Up	-.3	10:30:40	47	10:30:46	6
Down	49.35	10:31:40	2.4	10:31:46	6
Up	-.33	10:32:25	49.35	10:32:32	7
Down	49.46	10:33:05	.04	10:33:11	6
Up	-.4	10:33:50	49.35	10:33:57	7
Down	49.32	10:34:25	Ø	10:34:30	5
Up	-.35	10:35:05	49.35	10:35:11	6
Down	49.32	10:35:50	-.5	10:35:57	7
Up	-.4	10:36:20	49.42	10:36:27	7
Down	49.30	10:36:50	-.33	10:36:57	7

Operator	Timothy Brown	Date	9/8/06

SOLVAY SODA ASH JOINT VENTURE
COMMON STACK COMS
AVERAGING PERIOD CALCULATION AND RECORDING CHECK
August 31, 2006

Low Scale Filter			Mid Scale Filter			High Scale Filter		
Run No.	Time	CEMS	Run No.	Time	CEMS	Run No.	Time	CEMS
1	13:29	15.6	1	13:45	26.0	1	14:01	49.6
2	13:30	15.5	2	13:46	26.0	2	14:02	49.6
3	13:31	15.6	3	13:47	26.0	3	14:03	49.6
4	13:32	15.5	4	13:48	26.0	4	14:04	49.7
5	13:33	15.5	5	13:49	26.0	5	14:05	49.6
6	13:34	15.5	6	13:50	26.0	6	14:06	49.6
7	13:35	15.5	7	13:51	26.0	7	14:07	49.6
8	13:36	15.5	8	13:52	26.0	8	14:08	49.7
9	13:37	15.5	9	13:53	26.0	9	14:09	49.6
10	13:38	15.5	10	13:54	26.0	10	14:10	49.6
11	13:39	15.5	11	13:55	26.0	11	14:11	49.7
12	13:40	15.5	12	13:56	26.0	12	14:12	49.6
13	13:41	15.5	13	13:57	26.0	13	14:13	49.4
CEMS Mean Average		**15.5**			**26.0**			**49.6**
Refernce Value		**15.32**			**25.84**			**49.83**
Percent Error		**1.3**			**0.6**			**0.4**
Percent Limit		**2.0**			**2.0**			**2.0**

CALCULATIONS: PE = (RM-CEM)/RM * 100

WHERE: PE = Percent Error
RM = Refernce method value
CEM = Arithmetic mean of the CEMS values

CeDAR 1-Minute Data

SOLVAY SODA ASH JOINT VENTURE

Data for 8/31/2006 1:15 PM thru 8/31/2006 2:20 PM

Timestamp	(CA-1 & 2) Opacity % 1-Min
8/31 13:15	4.1
8/31 13:16	4.1
8/31 13:17	4.2
8/31 13:18	3.9
8/31 13:19	4.0
8/31 13:20	3.9
8/31 13:21	3.8
8/31 13:22	3.8
8/31 13:23	3.9
8/31 13:24	4.0
8/31 13:25	4.1
8/31 13:26	25.9
8/31 13:27	3.5
8/31 13:28	14.9
8/31 13:29	15.6
8/31 13:30	15.5
8/31 13:31	15.6
8/31 13:32	15.5
8/31 13:33	15.5
8/31 13:34	15.5
8/31 13:35	15.5
8/31 13:36	15.5
8/31 13:37	15.5
8/31 13:38	15.5
8/31 13:39	15.5
8/31 13:40	15.5
8/31 13:41	15.5
8/31 13:42	15.5
8/31 13:43	15.6
8/31 13:44	18.3
8/31 13:45	26.0
8/31 13:46	26.0
8/31 13:47	26.0
8/31 13:48	26.0
8/31 13:49	26.0
8/31 13:50	26.0
8/31 13:51	26.0
8/31 13:52	26.0
8/31 13:53	26.0
8/31 13:54	26.0
8/31 13:55	26.0
8/31 13:56	26.0
8/31 13:57	26.0
8/31 13:58	25.6
8/31 13:59	24.5
8/31 14:00	31.9
8/31 14:01	49.6

Timestamp	(CA-1 & 2) Opacity % 1-Min
8/31 14:02	49.6
8/31 14:03	49.6
8/31 14:04	49.7
8/31 14:05	49.6
8/31 14:06	49.6
8/31 14:07	49.6
8/31 14:08	49.7
8/31 14:09	49.6
8/31 14:10	49.6
8/31 14:11	49.7
8/31 14:12	49.6
8/31 14:13	49.4
8/31 14:14	49.6
8/31 14:15	49.6
8/31 14:16	49.6
8/31 14:17	44.4
8/31 14:18	18.4
8/31 14:19	19.9
8/31 14:20	24.2
Average (all)	25.1
Total (all)	--
Minimum (all)	3.5
Maximum (all)	49.7
Average (valid values only)	4.0
Total (valid values only)	--
Count (valid values only)	10

SOLVAY SODA ASH JOINT VENTURE

OPACITY CALIBRATION DRIFT TEST

SPAN 100
MANUF: Teledyne Instruments
MODEL: LightHawk 560
SERIAL NO. 5600912

Zero Drift

DATE	TIME	n	RM	CEM	% ERROR	/d/	d_i^2
9/9/2006	4:06 AM	1	0.00	0.60	-0.60	-0.60	0.36
9/10/2006	4:06 AM	2	0.00	0.37	-0.37	-0.37	0.14
9/11/2006	4:06 AM	3	0.00	0.11	-0.11	-0.11	0.01
9/12/2006	4:06 AM	4	0.00	0.00	0.00	0.00	0.00
9/13/2006	4:06 AM	5	0.00	0.04	-0.04	-0.04	0.00
9/14/2006	4:06 AM	6	0.00	0.21	-0.21	-0.21	0.04
9/15/2006	4:06 AM	7	0.00	0.39	-0.39	-0.39	0.15

n	7.00
avg /d/	0.25
avg /RM/	0.00
avg /CEM/	0.25
SUM(d_i)	1.72
SUM(d_i^2)	0.71
SUM(d_i)^2	2.96
S_d	0.22
CC	0.20
ZD % error	0.45
LIMIT	2.00%

Span Drift

DATE	TIME	n	RM	CEM	% ERROR	/d/	d_i^2
9/9/2006	4:06 AM	1	35.00	34.98	0.02	0.02	0.00
9/10/2006	4:06 AM	2	35.00	35.02	-0.02	-0.02	0.00
9/11/2006	4:06 AM	3	35.00	35.01	-0.01	-0.01	0.00
9/12/2006	4:06 AM	4	35.00	34.99	0.01	0.01	0.00
9/13/2006	4:06 AM	5	35.00	34.95	0.05	0.05	0.00
9/14/2006	4:06 AM	6	35.00	34.96	0.04	0.04	0.00
9/15/2006	4:06 AM	7	35.00	34.91	0.09	0.09	0.01

n	7.00
avg /d/	0.03
avg /RM/	35.00
avg /CEM/	34.97
SUM(d_i)	0.18
SUM(d_i^2)	0.01
SUM(d_i)^2	0.03
S_d	0.04
CC	0.04
SD % error	0.06
LIMIT	2.00%

CALCULATIONS: $Er = |D + CC|$

WHERE: Er = Error
D = Arithmetic mean of the RM - CEM
CC = Coffidence Coefficient

SOLVAY SODA ASH JOINT VENTURE

7-Day Drift Test

CA-1 & 2 Opacity %

Time	Instrument Span	Zero Reference	Zero Measured	Zero Drift	Zero Drift Limit	Span Reference	Span Measured	Span Drift	Span Drift Limit	Status
09/09/06 04:06 AM	100	0.00	0.60	0.60	2.00	35.00	34.98	-0.02	2.00	On-Line
09/10/06 04:06 AM	100	0.00	0.37	0.37	2.00	35.00	35.02	0.02	2.00	On-Line
09/11/06 04:06 AM	100	0.00	0.11	0.11	2.00	35.00	35.01	0.01	2.00	On-Line
09/12/06 04:06 AM	100	0.00	0.00	0.00	2.00	35.00	34.99	-0.01	2.00	On-Line
09/13/06 04:06 AM	100	0.00	0.04	0.04	2.00	35.00	34.95	-0.05	2.00	On-Line
09/14/06 04:06 AM	100	0.00	0.21	0.21	2.00	35.00	34.96	-0.04	2.00	On-Line
09/14/06 04:12 AM	100	0.00	0.04	0.04	2.00	35.00	35.07	0.07	2.00	On-Line
09/15/06 04:06 AM	100	0.00	0.39	0.39	2.00	35.00	34.91	-0.09	2.00	On-Line

The 7-Day Drift Test has been passed.

SOLVAY2016_1.3_001673

APPENDIX 5

DAHS VERIFICATION DOCUMENTATION

Formula Verification Examples

Unit Name: SOLVAY SODA ASH JOINT VENTURE
Date/ Time: 06/16/06 HOUR 1200 Unit /Stack # COMMON STACK

Formula F-5
Parameter NOX lb/mmBtu for gas

Fd scf/mmbtu	K (lb/dscf)/ ppm CO	NOX ppmv	O2 dry %	NOX lb/mmBtu
9780	1.19E-07	34.0	12.9	0.103

Formula CiSCO ID 0090
Parameter NOX lb/hr

Conversion for ppm	NOX ppmv	MW lb/lb-mol NOx	Stack Flow kdscf/hr	Stack Flow Conversion dscf/kdscf	Conversion dscf/lb-mol	NOX lb/hr
1.0E-06	34.0	46.0	9250.0	1000.000	385.3	37.5

Parameter NOx ppm@3% O2

NOx ppm	O2 dry %	NOx ppm corr
34.0	12.9	76.08

SOLVAY SODA ASH JOINT VENTURE

GREEN RIVER, WY

CA-1 & 2 Daily Emissions & Operations Report

June 16, 2006

30-Day Rolling Emission Limits	Yearly Emission Limits
NOx lb/mmBtu - 0.29	NOx Tons/year - 508.1
NOx lb/hr - 116	

Hour	O2% Dry	O2% Wet	NOx ppm	NOx ppm @3% O2	NOx lb/mmBtu	NOx lbs	Stack Flow kdscf	Stack Pressure inches H2O	Stack Temp °F	Process Status
00	13.0	9.5	46.3	104.91	0.143	39.8	7196	-0.566	350.3	Normal
01	13.1	9.6	46.3	106.25	0.145	50.3	9103	-0.575	346.4	Normal
02	13.1	9.6	42.1	96.61	0.131	45.9	9136	-0.586	345.2	Normal
03	13.1	9.6	42.8	98.22	0.134	46.3	9062	-0.592	346.4	Normal
04	13.1	9.6	41.5	95.24	0.130	44.0	8871	-0.596	347.8	Normal
05	13.0	9.6	48.1	108.99	0.148	51.2	8919	-0.594	350.6	Normal
06	13.1	9.6	46.9	107.63	0.146	49.9	8921	-0.579	350.5	Normal
07	13.0	9.5	48.1	108.99	0.148	51.7	9002	-0.562	347.6	Normal
08	13.0	9.5	32.8	74.32	0.101	35.4	9051	-0.556	347.6	Normal
09	12.9	9.4	36.3	81.22	0.110	39.6	9130	-0.539	341.4	Normal
10	12.9	9.4	35.9	80.33	0.109	39.8	9293	-0.519	333.3	Normal
11	12.9	9.4	33.5	74.96	0.102	37.1	9287	-0.510	330.8	Normal
12	12.9	9.4	34.0	76.08	0.103	37.5	9250	-0.491	335.2	Normal
13	**Maint**	**Maint**	**Maint**	**Maint**	**Maint**	**Maint**	**Maint**	-0.497	341.4	Normal
14	12.8	9.4	41.6	91.93	0.125	45.9	9252	-0.481	345.9	Normal
15	12.9	9.4	36.6	81.89	0.111	40.6	9286	-0.475	339.4	Normal
16	12.8	9.3	37.2	82.21	0.112	41.2	9287	-0.442	334.1	Normal
17	13.0	9.5	33.5	75.91	0.103	36.9	9233	-0.452	339.3	Normal
18	12.8	9.3	36.5	80.66	0.110	39.7	9118	-0.445	345.5	Normal
19	12.8	9.4	35.8	79.11	0.108	39.7	9292	-0.456	346.0	Normal
20	12.9	9.3	31.6	70.70	0.096	34.5	9135	-0.518	344.3	Normal
21	13.1	9.5	31.5	72.29	0.098	34.2	9088	-0.551	347.7	Normal
22	13.0	9.5	33.0	74.77	0.102	36.2	9184	-0.569	343.7	Normal
23	13.0	9.5	32.7	74.09	0.101	36.0	9226	-0.566	342.6	Normal
Average	13.0	9.5	38.5	86.8	0.118			-0.530	343.5	
Total						953.4	208322			
30-Day Rlng										
Yr-To-Date (Tons)						4.1				

SOLVAY2016_1.3_001676

Formula Verification Examples

Unit Name: SOLVAY SODA ASH JOINT VENTURE
Date/ Time: 06/16/06 HOUR 1200 Unit /Stack # UNIT 2 CALCINER

Formula F-5
Parameter NOX lb/mmBtu for gas

Fd scf/mmbtu	K (lb/dscf)/ ppm CO	NOX ppmv	O2 dry %	NOX lb/mmBtu
9780	1.194E-07	85.0	12.0	0.233

Formula F-20
Parameter Heat Input

Parameter NOx lb/hr gas

NOx lb/mmBtu	Heat input mmBtu/hr	NOx lb/hr
0.233	180.7	42.1

Parameter NOx ppm@3% O2

NOx ppm	O2 dry %	NOx ppm corr
85.0	12.0	170.96

SOLVAY SODA ASH JOINT VENTURE

GREEN RIVER, WY

CA-2 Daily Emissions & Operations Report

June 16, 2006

Hour	O2%	NOx ppm	NOx ppm @3% O2	NOx lb/mmBtu	NOx lbs	Stack Flow kdscf	Heat Input mmBtu	Stack Pressure inches H2O	Stack Temp °F	Process Status
00	12.2	125.8	258.83	0.352	62.3	4151	176.7	-4.842	390.2	Normal
01	12.3	126.4	263.09	0.358	62.3	4131	173.8	-4.820	391.9	Normal
02	12.4	115.6	243.44	0.331	57.3	4149	172.5	-4.846	391.5	Normal
03	12.5	117.5	250.39	0.341	58.1	4141	170.2	-4.800	388.9	Normal
04	12.4	114.9	241.97	0.329	57.2	4172	173.5	-4.912	388.1	Normal
05	12.4	128.7	271.03	0.369	63.8	4152	172.6	-4.896	391.8	Normal
06	12.4	126.4	266.18	0.362	62.3	4128	171.7	-4.799	392.6	Normal
07	12.2	129.8	267.06	0.363	64.0	4129	175.8	-4.838	389.9	Normal
08	12.2	83.9	172.62	0.235	41.4	4135	176.0	-4.843	391.8	Normal
09	11.9	88.5	176.02	0.239	44.0	4166	183.4	-4.899	390.3	Normal
10	12.0	86.5	173.97	0.237	43.0	4167	181.4	-4.839	390.8	Normal
11	12.1	81.5	165.78	0.226	40.5	4165	179.3	-4.846	388.4	Normal
12	12.0	85.0	170.96	0.233	42.1	4150	180.7	-4.880	389.0	Normal
13	11.8	90.8	178.61	0.243	44.8	4134	184.0	-5.016	400.0	Normal
14	11.8	98.6	193.95	0.264	49.2	4178	186.0	-5.201	408.0	Normal
15	12.1	89.2	181.44	0.247	44.0	4129	177.8	-4.775	406.2	Normal
16	11.7	92.0	179.00	0.244	46.0	4192	188.7	-4.858	390.0	Normal
17	12.1	84.4	171.68	0.234	41.5	4119	177.3	-4.730	396.7	Normal
18	11.6	91.2	175.54	0.239	45.6	4188	190.5	-5.167	398.3	Normal
19	11.9	88.4	175.82	0.239	43.7	4145	182.5	-5.112	414.9	Normal
20	11.7	81.5	158.57	0.216	40.7	4187	188.5	-5.087	406.1	Normal
21	12.2	82.0	168.71	0.230	40.5	4137	176.1	-4.771	396.7	Normal
22	11.9	86.2	171.44	0.233	43.4	4213	185.5	-4.937	388.8	Normal
23	12.0	85.3	171.56	0.233	42.7	4191	182.5	-4.967	389.7	Normal
Average	12.1	99.2	202.0	0.275				-4.903	394.6	
Total					1180.4	99749	4307			

SOLVAY2016_1.3_001678

APPENDIX 6

GAS CYLINDER CERTIFICATES
AND
COMS ATTENUATOR CERTIFICATES

RATA CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

500 WEAVER PARK RD,LONGMONT,CO 80501 Phone: 888-253-1635 Fax: 303-772-767

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
500 WEAVER PARK RD
LONGMONT,CO 80501

P.O. No.: 6010
Project No.: 08-37683-002

Customer
OPTIMAL AIR TESTING SERVICES, INC

9971 W. LANDMARK LN
CASPER WY 82604

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: ALM034985 **Certification Date:** 14Jul2005 **Exp. Date:** 13Jul2008
Cylinder Pressure*:** 2000 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ANALYTICAL ACCURACY**	TRACEABILITY
OXYGEN	5.11 %	+/- 1%	Direct NIST and NMi
NITROGEN	BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 2657	30Jun2007	AAL067786	1.995 %	OXYGEN

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
PARAMAG O2/SERVOMEX/244/701/1446	13Jul2005	PARAMAGNETIC

ANALYZER READINGS

(Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

First Triad Analysis

OXYGEN

Date: 14Jul2005	Response Unit:AREA	
Z1=0.00000	R1=0.20000	T1=0.50000
R2=0.20000	Z2=0.00000	T2=0.50000
Z3=0.00000	T3=0.50000	R3=0.20000
Avg. Concentration:	5.106 %	

Second Triad Analysis

Calibration Curve

Concentration=A+Bx+Cx2+Dx3+Ex4
r=0.999989

Constants:	A=0.06575764-
B=1.00	C=
D=	E=

APPROVED BY: _____
ADAM HANLEY

SOLVAY2016_1.3_001680

Airgas

Certificate of Analysis: EPA Protocol Gas Mixture

Airgas Specialty Gases
12722 South Wentworth Avenue
Chicago, IL 60628
773.785.9000 Fax 773.785.1928
www.airgas.com

Cylinder Number: CC178615@ Reference Number: 54-124019724-6
Cylinder Pressure: 2013.3 PSIG Expiration Date: 5/24/2007
Certification Date: 5/24/2004 Laboratory: W08 - 124

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
CARBON DIOXIDE	11.92 %	+/- 1%	NDIR	G1
OXYGEN	11.94 %	+/- 1%	Paramagnetic	G1
NITROGEN	Balance			

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences.

Notes:

Do not use cylinder below 150 psig.

Approval Signature

Reference Standard Information

Type	Component	Cyl.Number	Concentration
NTRM 970513	CARBON DIOXIDE	SG0169295BAL	17.89 %
NTRM 980508	OXYGEN	SG9153936BAL	23.85 %

Analytical Results

1st Component CARBON DIOXIDE

1st Analysis Date: 05/24/2004

R 17.87	S 11.89	Z 0.000	Conc 11.91 %
S 11.90	Z 0.000	R 17.87	Conc 11.92 %
Z 0.000	R 17.87	S 11.90	Conc 11.92 %
			AVG: 11.92 %

2nd Component OXYGEN

1st Analysis Date: 05/24/2004

R 23.85	S 11.94	Z 0.000	Conc 11.94 %
S 11.94	Z 0.000	R 23.85	Conc 11.94 %
Z 0.000	R 23.85	S 11.91	Conc 11.94 %
			AVG: 11.94 %

SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 60 Industrial Drive • Alpha, NJ 08865 www.spectra-gases.com

RECERTIFICATION OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER:	OPTIMAL AIR TESTING SERVICES	**CYLINDER # :**	CC-68355
SGI ORDER # :	0073420	**CYLINDER PRES:**	800 PSIG
ITEM# :	1	**CGA OUTLET:**	660
P.O.# :	Verbal-Dan		

CERTIFICATION DATE: 7/20/2005
EXPIRATION DATE: 7/19/2007

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	3/20/2003 7/20/2005	101.9 ppm 102.4 ppm	102.2 ppm	+/- 1%
Nitric Oxide	3/18/2003 7/19/2005	103.4 ppm 103.5 ppm	103.5 ppm	+/- 1%
NOx			103.6 ppm	Reference Value Only
Sulfur Dioxide	3/17/2003 7/19/2005	100.3 ppm 100.1 ppm	100.2 ppm	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: 3/17/2003 by Spectra Gases

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	NTRM-81679	CC-134709	101.0 ppm
Nitric Oxide	NTRM-81684	CC-133627	99.5 ppm
Sulfur Dioxide	GMIS-1	CC-135535	202 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	7/18/2005
Nitric Oxide	CAI-400-CLD	6L09004	Chemi	7/6/2005
Sulfur Dioxide	Horiba VIA-510	851221093	NDIR	7/11/2005

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: CS **DATE:** 7/21/2005
CHERYL PATINO

KATA CLASS

Dual-Analyzed Calibration Standard

Scott Specialty Gases
500 WEAVER PARK RD,LONGMONT,CO 80501 Phone: 888-253-1635 Fax: 303-772-7673

CERTIFICATE OF ACCURACY: Interference Free™ Multi-Component EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
500 WEAVER PARK RD
LONGMONT,CO 80501

P.O. No.: 4500325066
Project No.: 08-20880-001

Customer
SOLVAY MINERALS, INC

400 COUNTY ROAD 85
GREEN RIVER WY 82935

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: AAL16337
Cylinder Pressure***: 2015 PSIG
Certification Date: 01Feb2005
Exp. Date: 01Feb2007

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ACCURACY**	TRACEABILITY
CARBON DIOXIDE	12.0	%	+/- 1%	Direct NIST and NMI
NITRIC OXIDE	220	PPM	+/- 1%	Direct NIST and NMI
SULFUR DIOXIDE *	55.3	PPM	+/- 1%	Direct NIST and NMI
NITROGEN - OXYGEN FREE		BALANCE		
TOTAL OXIDES OF NITROGEN	221.	PPM		Reference Value Only

*** Do not use when cylinder pressure is below 150 psig.
** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997. Product certified as +/- 1% analytical accuracy is directly traceable to NIST or NMI standards.
* This Protocol was certified using corrected NIST SO2 standard values, per EPA guidance dated 7.24.06 and will not correlate with uncorrected Protocols.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1675	04Jul2008	K009325	13.93 %	CARBON DIOXIDE
NTRM 1685	01Dec2006	AAL069501	244.5 PPM	NITRIC OXIDE
NTRM 1693	01Nov2006	ALM000485	50.18 PPM	SULFUR DIOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
MKS Online/2030/000929062	13Jan2005	FTIR
MKS Online/2030/000929062	27Jan2005	FTIR
MKS Online/2030/000929062	20Jan2005	FTIR

ANALYZER READINGS

(Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

CARBON DIOXIDE

First Triad Analysis
Date: 24Jan2005 Response Unit:%
Z1 =0.00186 R1 =13.98418 T1 =12.03279
R2 =13.98511 Z2 =0.00279 T2 =12.03686
Z3 =0.00286 T3 =12.04606 R3 =13.99331
Avg. Concentration: 11.99 %

Calibration Curve
Concentration = A+Bx+Cx2+Dx3+Ex4
r =9.99982E-1
Constants: A =0.00000E+0
B =5.32065E-1 C =5.13200E-3
D =0.00000E+0 E =0.00000E+0

NITRIC OXIDE

First Triad Analysis
Date: 24Jan2005 Response Unit:PPM
Z1 =-0.29045 R1 =244.1282 T1 =219.7095
R2 =244.5647 Z2 =-0.00893 T2 =219.7474
Z3 =-0.05434 T3 =219.8222 R3 =244.5791
Avg. Concentration: 219.8 PPM

Second Triad Analysis
Date: 01Feb2005 Response Unit: PPM
Z1 =0.10053 R1 =245.2175 T1 =220.0633
R2 =245.3093 Z2 =0.14139 T2 =220.1560
Z3 =0.14225 T3 =220.2465 R3 =246.1548
Avg. Concentration: 219.2 PPM

Calibration Curve
Concentration = A+Bx+Cx2+Dx3+Ex4
r =9.99997E-1
Constants: A =0.00000E+0
B =9.77661E-1 C =4.40000E-5
D =0.00000E+0 E =0.00000E+0

SULFUR DIOXIDE *

First Triad Analysis
Date: 24Jan2005 Response Unit:PPM
Z1 =0.00727 R1 =49.96937 T1 =55.03330
R2 =49.97793 Z2 =0.01482 T2 =55.08226
Z3 =0.01497 T3 =55.10166 R3 =50.00642
Avg. Concentration: 55.29 PPM

Second Triad Analysis
Date: 01Feb2005 Response Unit: PPM
Z1 =-0.00228 R1 =49.99591 T1 =55.06828
R2 =50.00262 Z2 =0.02070 T2 =55.08378
Z3 =0.02149 T3 =55.09763 R3 =50.01170
Avg. Concentration: 55.28 PPM

Calibration Curve
Concentration = A+Bx+Cx2+Dx3+Ex4
r =9.99996E-1
Constants: A =0.00000E+0
B =1.00050E+0 C =1.30000E-5
D =0.00000E+0 E =0.00000E+0

APPROVED BY: Samuel Bennett

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Telephone: (323) 585-2154
Facsimile: (714) 542-6689

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER US WELDING - ROCKSPRINGS P.O NUMBER

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
NITRIC OXIDE GMIS	SRM#1686b	SA 11830	505 ppm

ANALYZER READINGS

R=REFERENCE STANDARD *Z=ZERO GAS* *C=GAS CANDIDATE*

1. COMPONENT NITRIC OXIDE GMIS ANALYZER MAKE-MODEL-S/N BECKMAN 951A S/N#0101354
ANALYTICAL PRINCIPLE CHEMILUMINESCENCE LAST CALIBRATION DATE 01/03/06
FIRST ANALYSIS DATE 01/04/06 SECOND ANALYSIS DATE 01/11/06

Z 0.0	R 541.4	C 386.9	CONC. 360.1	Z 0.0	R 506.6	C 360.0	CONC. 358.9		
R 544.2	Z 0.0	C 388.9	CONC. 360.9	R 507.3	Z 0.0	C 360.3	CONC. 358.7		
Z 0.0	C 388.1	R 544.6	CONC. 359.9	Z 0.0	C 359.8	R 507.5	CONC. 358.0		
U/M mV	MEAN TEST ASSAY 360.3 ppm			U/M mV	MEAN TEST ASSAY 358.5 ppm				

NOx value for reference only. Valves not valid below 150 psig.

THIS CYLINDER NO. CC 159676
HAS BEEN CERTIFIED ACCORDING TO SECTION EPA-600/R97/121
OF TRACEABILITY PROTOCOL NO. Rev. 9/97
PROCEDURE G1
CERTIFIED ACCURACY ± 1 % NIST TRACEABLE
CYLINDER PRESSURE 2000 PSIG
CERTIFICATION DATE 01/11/06
EXPIRATION DATE 01/11/08 TERM 24 MONTHS

CERTIFIED CONCENTRATION

NITRIC OXIDE	359 ppm
NITROGEN	BALANCE
NOX	364 ppm

ANALYZED BY CHRIS VU CERTIFIED BY VICTOR DOTAN

Spectra Gases, Inc.

3434 Route 22 West, Branchburg, New Jersey 08876 USA

ISO 9001:2000

Shipped from: 80 Industrial Drive, Alpha, NJ 08865

Job 21018-1

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER:	Cisco-Custom Instrument Service	**CYLINDER # :**	CC-68377
SGI ORDER # :	0081466	**CYLINDER PRES:**	2000 PSIG
ITEM# :	1	**CGA OUTLET:**	580
P.O.# :	16593		

CERTIFICATION DATE: 12/5/2005
EXPIRATION DATE: 12/5/2008

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Oxygen	12/5/2005	2.52 %	2.52 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Oxygen	GMIS-1	CC-106664	10.01 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Oxygen	CAI-300	S03001	PM	11/28/2005

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES. DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____
FRED PIKULA

DATE: 12/5/2005

Tel: +1 908-252-9300 Fax: +1 908-252-0811
www.spectragases.com

Spectra Gases, Inc.

3434 Route 22 West, Branchburg, New Jersey 08876 USA

ISO 9001:2000

Shipped from: 80 Industrial Drive, Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER: Cisco-Custom Instrument Service
SGI ORDER # : 0078202
ITEM# : 3
P.O.# : 8834

CYLINDER # : CC-130933
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 10/6/2005
EXPIRATION DATE: 10/6/2007

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	9/26/2005 10/6/2005	360.3 ppm 360.5 ppm	360 ppm	+/- 1%
NOx			361 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	NTRM-81687	CC-130950	992 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	CAI-400-CLD	6L09004	Cheml	9/19/2005

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____ DATE: 10/6/2005
FRED PIKULA

Tel: +1 908-252-9300 Fax: +1 908-252-0811
www.spectragases.com

Spectra Gases, Inc.

3434 Route 22 West, Branchburg, New Jersey 08876 USA

ISO 9001:2000

Shipped from: 80 Industrial Drive, Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER:	Cisco-Custom Instrument Service	CYLINDER # :	CC-98768
SGI ORDER # :	0078202	CYLINDER PRES:	2000 PSIG
ITEM# :	8	CGA OUTLET:	580
P.O.# :	8834		

CERTIFICATION DATE: 10/7/2005
EXPIRATION DATE: 10/7/2008

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Oxygen	10/7/2005	2.51 %	2.51 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Oxygen	GMIS-1	CC-94813	2.02 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Oxygen	CAI-300	S03001	PM	9/9/2005

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____ DATE: 10/7/2005
TED NEEME

Tel: +1 908-252-9300 Fax: +1 908-252-0811
www.spectragases.com

Spectra Gases, Inc.

3434 Route 22 West, Branchburg, New Jersey 08876 USA

ISO 9001:2000

Shipped from: 80 Industrial Drive, Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER:	Cisco-Custom Instrument Service	CYLINDER # :	CC-94388
SGI ORDER # :	0078202	CYLINDER PRES:	2000 PSIG
ITEM# :	7	CGA OUTLET:	590
P.O.# ;	8834		

CERTIFICATION DATE: 10/5/2005
EXPIRATION DATE: 10/5/2008

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Oxygen	10/5/2005	18.00 %	18.00 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Oxygen	NTRM-82659x	CC-83894	22.8 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Oxygen	CAI-300	S03001	PM	9/20/2005

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: CHERYL PATINO

DATE: 10/6/2005

Tel: +1 908-252-9300 Fax: +1 908-252-0811
www.spectragases.com

Spectra Gases, Inc.

3434 Route 22 West, Branchburg, New Jersey 08876 USA

ISO 9001:2000

Shipped from: 80 Industrial Drive, Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER:	Cisco-Custom Instrument Service	**CYLINDER # :**	CC-68377
SGI ORDER # :	0081466	**CYLINDER PRES:**	2000 PSIG
ITEM# :	1	**CGA OUTLET:**	580
P.O.# :	16593		

CERTIFICATION DATE: 12/5/2005
EXPIRATION DATE: 12/5/2008

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Oxygen	12/5/2005	2.52 %	2.52 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Oxygen	GMIS-1	CC-106664	10.01 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Oxygen	CAI-300	S03001	PM	11/28/2005

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____
FRED PIKULA

DATE: 12/5/2005

Tel: +1 908-252-9300 Fax: +1 908-252-0811
www.spectragases.com

Job 2016.1

SOLVAY2016_1.3_001689

Solvay

Spectra Gases, Inc.

3434 Route 22 West, Branchburg, New Jersey 08876 USA

ISO 9001:2000

Shipped from: 80 Industrial Drive, Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER:	Cisco-Custom Instrument Service	CYLINDER # :	CC-94388
SGI ORDER # :	0078202	CYLINDER PRES:	2000 PSIG
ITEM# :	7	CGA OUTLET:	590
P.O.# :	8834		

CERTIFICATION DATE: 10/5/2005
EXPIRATION DATE: 10/5/2008

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Oxygen	10/5/2005	18.00 %	18.00 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Oxygen	NTRM-82659x	CC-83894	22.8 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Oxygen	CAI-300	S03001	PM	9/20/2005

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: CHERYL PATINO

DATE: 10/6/2005

Tel: +1 908-252-9300 Fax: +1 908-252-0811
www.spectragases.com

Spectra Gases, Inc.

3434 Route 22 West, Branchburg, New Jersey 08876 USA

ISO 9001:2000

Shipped from: 80 Industrial Drive, Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER:	Cisco-Custom Instrument Service	CYLINDER # :	CC-98768
SGI ORDER # :	0078202	CYLINDER PRES:	2000 PSIG
ITEM# :	8	CGA OUTLET:	580
P.O.# :	8834		

CERTIFICATION DATE: 10/7/2005
EXPIRATION DATE: 10/7/2008

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Oxygen	10/7/2005	2.51 %	2.51 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Oxygen	GMIS-1	CC-94813	2.02 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Oxygen	CAI-300	S03001	PM	9/9/2005

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____
TED NEEME

DATE: 10/7/2005

Tel: +1 908-252-9300 Fax: +1 908-252-0811
www.spectragases.com

Spectra Gases, Inc.

3434 Route 22 West, Branchburg, New Jersey 08876 USA

ISO 9001:2000

Shipped from: 80 Industrial Drive, Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER:	Cisco-Custom Instrument Service	CYLINDER # :	CC-130933
SGI ORDER # :	0078202	CYLINDER PRES:	2000 PSIG
ITEM# :	3	CGA OUTLET:	660
P.O.# :	8834		

CERTIFICATION DATE: 10/6/2005
EXPIRATION DATE: 10/6/2007

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	9/26/2005 10/6/2005	360.3 ppm 360.5 ppm	360 ppm	+/- 1%
NOx			361 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	NTRM-81687	CC-130950	992 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	CAI-400-CLD	6L09004	Cheml	9/19/2005

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____
FRED PIKULA

DATE: 10/6/2005

Tel: +1 908-252-9300 Fax: +1 908-252-0811
www.spectragases.com

SITE SPECIFICATION DATA
TML *LIGHTHAWK* 560 OPACITY MONITORING SYSTEM

COMPANY: Custom Instrumentation Services Corp.

TML SHOP ORDER NO: K-320205BP CAL DATE: 23-Sep-05

UNIT SERIAL #: 5600912

CAL. TECHNICIAN: Jeremy Brown

I. OPTICAL HEAD 1860-1000-03

14.7283 FEET Hinge to Hinge

FLANGE TO FLANGE CALIBRATION DISTANCE: 13.0000 FEET 3.962 meters

MONITOR PATH LENGTH: 12.0000 FEET 3.658 meters

EXIT PATH LENGTH: 12.0000 FEET 3.658 meters

PLCF: 1.000 *104 / F(7)*

A. SIX POINT I/O:

YES	
NO	X

OUTPUT UNITS: N/A F(0) Opacity = 1, Optical Density = 2, Dust Mass = 3

OUTPUT FULL SCALE: N/A F(E)

CAL ZERO/DUST COMP SCALING: N/A F(F) 0 = NORMAL mode scaling; 1= EXPANDED scaling

HARDWARE CURRENT RANGE

OUTPUT #1	*JU1*	N/A	0 or 1
	JU2	N/A	0 or 1
OUTPUT #2	*JU3*	N/A	0 or 1
	JU4	N/A	0 or 1

SOFTWARE RANGE FOR CURRENT OUTPUT

JU9	N/A	4 or 0	4 = 4-20ma, 0 = 0-20ma

RELAY JUMPERS

K1: JU12	N/A	A through H
K1: JU14	N/A	NC = Normally Closed or NO = Normally Open
K2: JU13	N/A	A through H
K2: JU15	N/A	NC = Normally Closed or NO = Normally Open

ISOLATOR INPUT JUMPERS

ISO1: JU7	N/A	A, B or C
ISO1: JU5	N/A	DRY or +5V
ISO2: JU8	N/A	A, B or C
ISO2: JU6	N/A	DRY or +5V

B. CAL MECHANISM

ZERO CAL VALUE: 0 % Opacity *105 / C(0)*

0.000 Optical Density

UPSCALE CAL VALUE: 35.72 % Opacity *106 / C(1)*

0.192 Optical Density

N.D. WINDOWS	Optical Density
ZERO	0.4
UPSCALE	0.6

IRIS OPENING DIAMETER

ZERO	0.25	decimal inches, approximate, enter 0.38" as 0.38
UPSCALE	0.25	

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C. AUTO CAL CYCLE

CYCLE FREQUENCY

CAL TIME HOUR	25	HR	*76 / C(4)*
CAL TIME MIN.	0	MIN.	*77 / C(5)*
CAL INTERVAL HOUR	0	HR	*78 / C(6)*

CYCLE DURATIONS

UPSCALE	90	SEC	*79 / C(8)*
ZERO	90	SEC	*80 / C(7)*
PLCF	90	SEC	*81 / C(9)*
DUST COMP.	90	SEC	*82 / C(A)*

D. POWER SUPPLY

+15 VDC:	14.68	*28 / S(8)*
-15 VDC:	-14.76	*29 / S(9)*
+5 VDC *analog* :	4.98	*30 / S(A)*
-5 VDC *analog* :	-5.01	*31 / S(B)*
+5 VDC *digital* :	4.94	*32 / S(C)*

E. "AS SHIPPED" CONFIG.

ZERO CAL OPACITY	-0.06	*17 / U(6)*	DUST COMP ALARM	4.00	*39 / C(2)*
UPSCALE CAL OPACITY	35.74	*18 / U(7)*	CAL DELTA	2.00	*107 / C(3)*
SIGNAL VOLTS	6.47	*20 / S(0)*	AVG. INTERVAL	6	*108 / F(B)*
REF. VOLTS	6.87	*21 / S(1)*	STACK 332 VERSION:	1.11	*116 / U(A)*
LED CURRENT	5.47	*22 / S(2)*	STACK NEURON VER:	1.5	*117 / U(B)*
XSTACK SET VOLTS	6.22	*23 / S(3)*	SIGNAL GAIN:	40	*121 / F(8)*
CAL ZERO SET VOLTS	6.22	*24 / S(4)*	REFERENCE GAIN:	32	*122 / F(9)*
BCK GRD SET VOLTS	0.27	*25 / S(5)*	COMMON GAIN:	0	*123 / F(A)*

II. PURGE SYSTEM

SINGLE BLOWER	
DUAL BLOWER	X
INSTRUMENT AIR	

42 CFM

AIR SHUTTERS:	YES	X
	NO	

III. RETROREFLECTOR

1802-0000-04

7 mm

IV. CALIBRATION KIT 1860-1250-01

A. N.D. WINDOW

Optical Density
0.4

B. IRIS OPENING DIAMETER

0.25 decimal inches, approximate, enter 0.38" as 0.38

C. ATTENUATOR VALUES:

	O.D	OPACITY	CAL DATE	SERIAL NO.
1)	0.0722	15.32	9/2/2005	s3262
2)	0.1298	25.64	7/20/2005	s3140
3)	0.2996	49.83	8/5/2005	s3206

D. NIST CALIBRATION:

YES	X
NO	

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COMPANY: Custom Instrumentation Services Corp.

TML SHOP ORDER NO: K--320205BP CAL DATE: 23-Sep-05

UNIT SERIAL #: 5600912

V. ENHANCED REMOTE PANEL

1803-2000-01

E. R. P. PROVIDED:		
	YES	X
	NO	

A. MULTI I/O PROVIDED:

	YES	X
	NO	

B. ANALOG OUTPUT CHANNEL SELECTIONS

CHANNEL 1	DEFINITION	INSTANT OPACITY	52
	WITH / W.O. CAL	NO	53
	ZERO VALUE	0	54
	FULL SCALE	100	55
CHANNEL 2	DEFINITION	SELECTABLE AVG OPACITY	56
	WITH / W.O. CAL	YES	57
	ZERO VALUE	0	58
	FULL SCALE	100	59
CHANNEL 3	DEFINITION	MINUTE AVG OPACITY	60
	WITH / W.O. CAL	YES	61
	ZERO VALUE	0	62
	FULL SCALE	100	63
CHANNEL 4	DEFINITION	DUST COMP OUTPUT	64
	WITH / W.O. CAL	NO	65
	ZERO VALUE	-5	66
	FULL SCALE	5	67

C. DIGITAL OUTPUT (Relay) SELECTIONS

DIGITAL OUTPUT 1	FAULT	68
DIGITAL OUTPUT 2	CAL ON AO	69
DIGITAL OUTPUT 3	PURGE FAILURE	70
DIGITAL OUTPUT 4	EXCESS DUST COMP	71
DIGITAL OUTPUT 5	INST OPAC LEVEL1	72
DIGITAL OUTPUT 6	AVG OPAC LEVEL1	73
DIGITAL OUTPUT 7	ZERO ON AO	74
DIGITAL OUTPUT 8	UPSCALE ON AO	75

D. "AS SHIPPED" CONFIG.

MIO VERSION	1.5	118
PANEL332 VERSION	1.13	119
PANEL NEURON VERSION	1.51	120
REF. TEMP	20	124
REF. PRESSURE	101.3	125